

2003

# Virginia Commonwealth University Graduate and Professional Programs Bulletin

Virginia Commonwealth University

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**VCU** Graduate and Professional  
Programs

# Bulletin

**Volume XXXV**  
**July 2003**

2003 – 04

Academic and Medical College of Virginia Campuses

Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, master's, doctoral and first professional degrees.

# Graduate and Professional Programs Bulletin 2003-04

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#### Virginia Commonwealth University School of Graduate Studies

1001 Grove Ave. • P.O. Box 843051  
Richmond, VA 23284-3051  
(804) 828-6916 • Fax (804) 828-6949  
<http://www.vcu.edu/graduate> • [vcu-grad@vcu.edu](mailto:vcu-grad@vcu.edu)

#### Virginia Commonwealth University Professional Programs

School of Allied Health Professions  
<http://www.sahp.vcu.edu>

School of Dentistry  
<http://www.dentistry.vcu.edu>

School of Medicine  
<http://www.medschool.vcu.edu>

School of Pharmacy  
<http://www.pharmacy.vcu.edu>

The Board of Visitors, the administration and the faculty of Virginia Commonwealth University are committed to a policy of equal opportunity in education and employment without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation or disability. For further information contact the Office of EEO/AA Services, 901 W. Franklin St., Richmond, VA 23284-3022, (804) 828-1347.

#### Limitations on bulletin provisions:

All rules set forth in this bulletin will apply until further notice. The university reserves the right to make changes in course of study, fees, rules and regulations governing the conduct of the work in all schools and programs, faculty and staff, and classification of students whenever university authorities deem it expedient or wise to do so. Please refer to the online version of this bulletin for updates that occur during the academic year.

<http://www.vcu.edu/bulletins>

# Letter from the President



It is my pleasure to welcome you to Virginia Commonwealth University.

With more than \$180 million in annual research funding, VCU is ranked by the Carnegie Foundation as one of the nation's top research universities and is one of only three such universities in Virginia. More than 26,000 undergraduate, graduate, professional and doctoral students pursue 164 degree and certificate programs at the university's two thriving campuses, located in the heart of Richmond. Forty of the university's programs are unique in Virginia. Twenty graduate programs have been ranked by U.S. News & World Report as among the best of their kind in the nation, with two ranked number one in their disciplines.

As part of a long-range strategic plan, VCU has been enhancing the university's stature as one of the nation's leading research universities. Strategic projects have included establishing a new School of Engineering, which has been an important factor in attracting the microelectronics industry to the state, and VCU Life Sciences, a comprehensive undergraduate and graduate program involving the academic and medical faculty.

VCU Life Sciences has spurred a major national public-education initiative through the public television series, "Secrets of the Sequence." In collaboration with Harvard University, the University of California at San Francisco, the University of Michigan, the University of Wisconsin-Madison and the Medical Research Council/Laboratory of Molecular Biology in Cambridge, England, VCU is advising the program's producers on the latest life sciences discoveries and their ethical implications.

The university also is developing the Virginia BioTechnology Research Park in collaboration with business, civic and government leaders. When it is fully developed, the research park will cover 34 acres in downtown Richmond and employ an estimated 3,000 professional and technical personnel.

The VCU Health System is one of the most comprehensive in the nation. Its physician-faculty, facilities and medical-care programs receive annual recognition from local, regional and national guides and reports on the best health care.

VCU is an extraordinary institution, and we are proud that you are part of the excitement here. Best wishes with your program of study.

Sincerely,

A handwritten signature in dark ink, reading "Eugene P. Trani". The signature is written in a cursive, flowing style.

Eugene P. Trani

# Virginia Commonwealth University

## The university

Virginia Commonwealth University is a state-supported institution with an enrollment of more than 26,000 undergraduate, graduate and health professions students studying in 11 schools and one college on its two campuses in Richmond, Va. The MCV Campus is located near the financial, governmental and shopping areas of downtown Richmond; the Academic Campus is two miles west in Richmond's historic Fan District, a residential area which dates from the 19th century.

The university takes its founding date as 1838, the year that the Medical College of Virginia was created as the medical department of Hampden-Sydney College. MCV became an independent institution in 1854 and state-supported in 1860.

VCU's Academic Campus was the former Richmond School of Social Work and Public Health, established in 1917. In 1925, it became the Richmond Division of the College of William and Mary; in 1939 its name was changed to the Richmond Professional Institute of the College of William and Mary, from which it separated in 1962 to become an independent state institution. In 1968, MCV and RPI merged to form VCU.

VCU enrolls a diverse student body. The university's level of funded research ranks it as a Carnegie Doctoral/Research University-Extensive, placing it among the top 100 research universities in the country. The VCU faculty, representing the finest American and international graduate institutions, enhances VCU's position as among the important institutions of higher learning in the United States via their work in the classroom, laboratory, studio, clinic and as published in scholarly journals. VCU maintains active communications with its growing cadre of alumni and enjoys a cooperative and stimulating relationship with the city of Richmond, which encompasses the arts, the business community, the architectural community and local government.

VCU's location in historic Richmond affords its students the benefits of living in one of the South's most cosmopolitan

cities. Located in central Virginia, Richmond is a two-hour drive from the Atlantic seashore to the east, Appalachian Mountain recreational sites to the west, and Washington, D.C. to the north. A wide range of cultural, educational and recreational facilities and activities is available in the Richmond area, including a full performance schedule at VCU's own Performing Arts Center.

## Mission of VCU

VCU is a public, urban, research university, supported by the commonwealth of Virginia to serve the people of the commonwealth and the nation. The university provides a fertile and stimulating environment for learning, teaching, research, creative expression and public service. Essential to the life of the university is a faculty actively engaged in scholarship and creative exploration activities that increase knowledge and understanding of the world, and inspire and enrich teaching.

The university is dedicated to educating full and part-time students of all ages and diverse backgrounds in an atmosphere of free inquiry and scholarship, so they may realize their full potential as informed, productive citizens with a lifelong commitment to learning and service.

The university serves the local, state, national and international communities through its scholarly activities, its diverse educational programs, and its public service activities. As an institution of higher learning in a metropolitan center that also is the capital of the commonwealth, the university enjoys unique resources that enrich its programs and offer special opportunities for contributing its intellectual and creative expertise in the development of innovative approaches to meet the changing needs of our society.

The goals of VCU in carrying out its mission are to:

- provide undergraduate education that includes a broad and rigorous foundation in the arts, sciences, and humanities and explores the ideas and values of humankind,

**President's Office**  
**910 W. Franklin St. • P.O. Box 842512**  
**Richmond, VA 23284-2512**  
**(804) 828-1200 • Fax (804) 828-7532**  
**<http://www.vcu.edu/president>**

**Dr. Eugene P. Trani**  
 President

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- offer nationally and internationally recognized professional and graduate programs leading to doctoral, master's, and other terminal and advanced degrees in the professions, the sciences, the humanities and the arts,
- foster a scholarly climate that inspires creativity, a free and open exchange of ideas, critical thinking, intellectual curiosity, freedom of expression and intellectual integrity,
- expand the boundaries of knowledge and understanding through research, scholarship and creative expression in the sciences, arts, humanities and the professional disciplines,
- value and promote racial and cultural diversity in its student body, faculty, administration and staff to enhance and enrich the university,
- develop and sustain a faculty of the highest quality by providing an environment conducive to their achieving and maintaining national and international stature and by continuing to attract both recognized scholars and outstanding individuals with a high potential for scholarly achievement and excellence in teaching,
- provide an optimal environment for educating and training health care professionals, for conducting research to improve health care and delivery and for meeting the needs of patients and

the community in a comprehensive health care setting,

- use the urban environment as a laboratory for studying and developing new approaches to problems pertaining to the public and private sectors,
- support, through its commitment to public exhibitions, performances, and other cultural activities, the imaginative power of the liberal, visual and performing arts to express the problems and aspirations of humanity and to enrich the lives of individuals,
- develop innovative programs for continuing education that establish permanent intellectual connections between the university and its constituents, enhance professional competence and promote dialogue on public issues,
- offer diverse opportunities for individuals to benefit from higher education through a variety of avenues to include flexible scheduling for part-time undergraduate and graduate students, open admission for nondegree-seeking students with appropriate preparation, advanced degree programs for working professionals, selected programs in diverse locales, admission for graduates with appropriate associate degrees of arts or sciences and support programs for specially admitted students,
- promote interdisciplinary studies within the university to bring new perspectives to bear on complex problems, and
- mobilize its creative energies and its expertise to meet the needs of society and individuals in its unique role as Virginia's major urban university.

### **VCU Medical Center Mission**

The VCU Medical Center is an integral part of VCU. The five academic schools and teaching hospitals of the MCV Campus serve the needs of the citizens of Virginia for:

- transmission of knowledge related to health services,
- continuity in the supply of health-care professionals,
- accessibility to comprehensive and quality health-care services,
- development and dissemination of new knowledge for the advancement of the health sciences.

The VCU Medical Center is committed to educational programs directed toward meeting the state's health needs. Programs are dedicated to maintaining and updating the competency of health professionals as well as preparing graduates to enter the

health professions. Educational programs are supported by several academic disciplines, the teaching hospital, carefully selected off-campus health facilities, and an institutional commitment to effective teaching.

The VCU Medical Center also is committed to a comprehensive program of patient care: to demonstrate excellence in practice as a model for students, to provide a base of study designed to improve patient care, to meet the needs of patients in its hospital's service area, and to offer highly specialized services in clinical areas of demonstrated expertise.

The VCU Medical Center's research programs are designed to develop new knowledge in areas ranging from the molecular level through clinical procedures to health-care delivery and outcomes. Their goal is to serve as a model for students in the spirit of inquiry and the application of the scientific process to patient care, and to focus interdisciplinary effort on problems amenable to the scientific approach.

### **Accreditation**

Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, master's, doctoral and first professional degrees. SACS is located at 1866 Southern Lane, Decatur, GA, 30033; telephone (404) 679-4500. In addition to SACS accreditation, individual programs may be accredited by discipline-specific professional accrediting organizations.

### **Oak Ridge Associated Universities Consortium**

Since 1963, students and faculty of VCU have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 87 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tenn. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship and research appointments and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education, the DOE facility that ORAU operates, undergraduates, graduates, postgraduates as well as faculty enjoy access to a multitude of opportunities for

study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, located on the Web at <http://www.oraugov/orise/resgd.htm> or by calling either of the contacts listed below.

ORAU's Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU's members, private industry and major federal facilities. Activities include faculty development programs such as the Ralph E. Powe Jr. Faculty Enhancement Awards, the Visiting Industrial Scientist Award and various services to chief research officers.

For more information about ORAU and its programs, contact:

Dr. Marsha Torr, ORAU Councilor for VCU  
(804) 828-0732

Ms. Monnie E. Champion, ORAU Corporate Secretary  
(865) 576-3306

or visit the ORAU Web site  
<http://www.oraugov>

### **Virginia Commonwealth University Health System**

In April 1996, Gov. George Allen signed a bill that officially transferred the operations, employees and obligations of the Medical College of Virginia Hospitals to the Medical College of Virginia Hospitals Authority. This transfer occurred on June 30, 1997.

The authority assumes the obligations of MCVH as well as the mission of operating the MCV Hospitals as teaching hospitals for the benefit of the schools of the Health Sciences Division of VCU, and of providing high quality patient care and a site for medical and biomedical research in close affiliation with the Health Sciences Division of VCU.

In winter 2000, the Virginia General Assembly and Gov. James Gilmore authorized the establishment of the Virginia

Commonwealth University Health System Authority. This legislation modified the existing MCV Hospitals Authority by integrating the clinical missions of MCV Hospitals, MCV Physicians and the School of Medicine.

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## Graduate and professional studies

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VCU is composed of the following academic units:

- School of Graduate Studies
- Center for Public Policy
- VCU Life Sciences
- College of Humanities and Sciences, including the
  - School of Mass Communications and the Center for Environmental Studies
- School of Allied Health Professions
- School of the Arts
- School of Business
- School of Dentistry
- School of Education
- School of Engineering
- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Social Work

Graduate programs are administered by the individual departments, schools and centers with assistance from the School of Graduate Studies. Major coordination of the various degree programs is performed by the University Graduate Council and the Graduate Dean's Advisory Committee, both of which are chaired by the dean of the School of Graduate Studies. The University Graduate Council is comprised of one elected faculty member from each school. The Graduate Dean's Advisory Council includes directors of graduate study from each school and center.

VCU's professional degree programs are administered by the individual schools offering the programs. Academic requirements are determined by the faculty and administration of the schools in order to satisfy professional licensure requirements.

## Graduate and professional programs

For complete information about graduate study at VCU, refer to the Graduate Studies at VCU chapter in this bulletin, as well as the individual school and program

sections. For information about professional programs of study, see the Professional Studies at VCU chapter. Refer to the admission requirements charts in the reference section of this bulletin for a complete listing of curricula, specializations and tracks, as well as application deadline dates and special admission requirements. Applicants are encouraged to contact the school/department sponsoring the intended program of study at the telephone numbers and/or e-mail addresses listed in the charts. Other important contact information is provided in the directory of this bulletin.

In-depth information about graduate study at VCU is available online at the School of Graduate Studies Web site (<http://www.vcu.edu/graduate>). This site provides links and contact information for all graduate programs offered at VCU. The Web site also provides access to the online version of the Graduate and Professional Programs Bulletin and updates that occur throughout the academic year, as well as the Application to Graduate Study and complete instructions for applying to all graduate programs.





# University Resources and Services

## Campus Police

The VCU Campus Police Department consists of professionally trained men and women who provide police and security services for the university community. All officers are sworn and certified in the commonwealth of Virginia and have passed state mandated training requirements prior to becoming VCU Police Officers. The department is open 24 hours a day, 365 days a year.

The VCU Health System Security Department, augmented by the VCU Police Department, is a non-sworn, 24 hours a day, 365 days a year program. It is committed to the security and safety of the populace to enhance the hospital's continuous mission for patient care.

The VCU Police Department has a University Security Department, which is non-sworn and consists of part-time employees, student auxiliary and volunteer students. These security guards wear a blue uniform that displays a security patch on the sleeve, and work inside the buildings and assist with escorts. They are assets to the VCU Police Department and assist as extra eyes and ears for the department.

The following specific programs are available to the members of the VCU community:

- tailor-made safety awareness or crime prevention oral presentations
- rape awareness talks and a self-defense course designed for women called RAD (Rape Aggression Defense)
- physical security surveys, upon request, with accompanying recommendations and suggestions
- escort services are available for both the MCV Campus and the Academic Campus. Call (804) 828-WALK for a walking or riding escort
- a Local Management Group (LMG) program. This program is similar to local Neighborhood Watch programs across the nation
- bicycle registration
- individual security consultations
- Operation Identification which is a program to engrave property

- McGruff the Crime Dog is available for special functions
- emergency telephones throughout both campuses
- a robbery prevention handbook
- Campus-On-Watch brochures and handbooks
- Campus Watch publication which is sent to employees monthly, addresses crime prevention tips and is designed by representatives of the Campus Police Department, and Victim/Witness Assistance

For information about services, contact the Crime Prevention Section of the VCU Police. Call (804) 828-1214 for assistance in setting up a program. Refer to the Web (<http://www.vcu.edu/police>) for more information.

## Emergency Reporting Telephone System

The ERTS is a set of special yellow call-box telephones placed at various locations (on both campuses) for emergency and non-emergency use. These phones operate as an enhanced 911 system when activated. The VCU Police can identify the location of the activated phone even if the caller is unable to speak. Once the phone is activated, an officer will survey the area unless the caller informs the dispatcher otherwise. These phones also can be used to request non-emergency assistance and information; however, these phones can only be used to contact VCU Police; therefore, callers cannot be transferred to outside lines. These phones have been installed for the benefit of the VCU community, and are there to enhance citizen safety and security.

## Career Center

### Cheryl Melton

Interim Director (1981)  
B.S. 1971 Virginia Commonwealth University  
M.Ed. 1987 Virginia Commonwealth University

## VCU Resource Guide <http://www.students.vcu.edu>

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### Susan Story

Associate Director (1990)  
B.S. 1968 State University of New York, Stony Brook  
M.Ed. 1988 Virginia Commonwealth University

### Alicia K. Aroche

Assistant Director (2001)  
B.A. 1995 Virginia Commonwealth University  
M.Ed. 1998 Virginia Commonwealth University

### Joseph Lyons

Assistant Director (1989)  
B.A. 1985 Norfolk State University  
M.A. 1998 Western Kentucky University

### Monyette Martin

Assistant Director (1998)  
B.B.A. 1993 James Madison University  
M.Ed. 1996 James Madison University

**Cara Thorpe**

Career Counselor (1998)  
B.S. 1994 University of Rhode Island  
M.Ed. 2002 Virginia Commonwealth University

**Darlene Ward**

Assistant Director (1998)  
B.S. 1987 Hampton University  
M.B.A. 1992 Hampton University

The University Career Center assists students and recent alumni to identify and achieve their career goals. Career Center staff work with students to help them explore career options, decide on career directions and to develop sound strategies for realizing their career goals.

The Career Center, located in Room 130 of the Student Commons, offers a career library of more than 600 printed books and publications. Students have access to employer literature such as annual reports, recruiting brochures, and graduate and professional school publications.

Career counseling sessions are offered by appointment using assessment tools, such as Campbell Interest and Skill Surveys, the Strong Interest Inventory, the Self-directed Search and the Myers-Briggs Type Indicator. Students may receive assistance with resume development, job search skills and interviewing techniques.

The Career Center maintains job postings of part-time, internship and off- and on-campus Work-study positions for students who are eligible. These postings may be accessed 24 hours a day through the Career Center Web site at <http://www.students.vcu.edu> /careers or in the Career Center computer lab.

The Career Center also offers a comprehensive Cooperative Education Program that blends traditional academics with paid work assignments in industry, business, government and nonprofit organizations. This combination enhances the student's academic knowledge, personal development and preparation for a professional career, and provides broad exposure to one's academic major. Students may work part time while taking classes or alternate semesters of work and study.

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## **Counseling Services, University**

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University Counseling Services (UCS) provides a wide range of services that meet the psychological, social, vocational and educational needs of students. The mission of UCS is to provide assistance to the VCU community in such a way that students can meet their academic goals while also having

the opportunity to develop personally, emotionally and socially. The intent is to enable students to live productive, responsible and satisfying lives.

To fulfill this mission, UCS provides services to promote student self-understanding and positive growth, as well as to assist students who are experiencing stress or crisis in their daily living. Staff is committed to rendering quality care in a multi-cultural context. Education and prevention services such as the Academic Success Program, workshops offered to resident halls and student organizations, as well as consultation to faculty and university departments are central to the services offered at UCS. Expertly lead group counseling, individual counseling as well as couples counseling is offered by the UCS staff.

To better understand the needs of students, UCS is committed to research that will provide evaluative data regarding its service delivery and information about student needs. UCS is committed to training graduate students in psychology, social work, rehabilitation and medicine to function as competent professionals in their chosen field.

University Counseling Services is located on the second floor of the Student Commons, Room 226 on the Academic Campus as well as on the third floor of Hunton Hall on the MCV Campus. The Academic Campus office is open Monday through Friday from 8 a.m. until 5 p.m. The MCV Campus office is open Monday, Wednesday, Thursday and Friday from 8 a.m. until 5 p.m.; Tuesday from 11 a.m. until 8 p.m.

For information, call the Academic Campus location at (804) 828-6200 or the MCV Campus location at (804) 828-3964. Web site: <http://www.students.vcu.edu/counsel>.

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## **Dining Services**

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Whether on the Academic Campus or the MCV Campus, VCU Dining Services has a variety of services and locations to accommodate students' dining needs. Residential restaurants include Hibbs Dining Center on the Academic Campus and Larrick Dining Center on the MCV Campus, offering unlimited-serving meals and take-out service seven days a week. Both dining centers accept meal and block plans, Dining Dollars, cash, Ram-Bucks and credit cards. Retail restaurants at the Student Commons on the Academic Campus include the Park Place Food Court

and the Commons Café, which feature quick-service meals and a variety of snack food and beverages. Breeze-Thru, located in the first floor lobby of the Hibbs Dining Center, offers breakfast, lunch and dinner meals to go. Java 901, located in the James Branch Cabell Library on the Academic Campus, is a gourmet coffee kiosk. On the MCV Campus, students will find Hunton's Café Express located at 12th & Marshall streets, and the Gateway Building houses Alpine Bagel Café and McDonald's. New to the MCV Campus is the Skull & Beans Coffee Kiosk, located in the Tompkins-McCaw Library.

Additional information regarding dining services, rates, hours of operation, menus and locations is available via the Web at <http://www.bsv.vcu.edu/vcufood>, by e-mail at [dining@vcu.edu](mailto:dining@vcu.edu), or by phone at (804) 828-FOOD (3663).

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## **Equal Employment Opportunity/Affirmative Action Services**

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Virginia Commonwealth University is committed to a policy of equal opportunity in education and employment. The Office of EEO/AA Services develops, implements and enforces policies which ensure equal opportunity to all programs, activities and services by members of the university community. Administrators, faculty members, staff and students may contact the Office to seek advice or pursue the filing of a complaint of discrimination on the basis of race, age, color, gender, national origin, religion, sexual orientation, veterans' status, political affiliation or disability. The Office of EEO/AA Services is located at 901 W. Franklin St., Room 114; telephone: (804) 828-1347; TTY: (804) 828-1420.

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## **Sexual harassment**

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The Office of EEO/AA Services also administers the university's Guidelines on the Prohibition of Sexual Harassment, providing guidance, prevention training and investigation of complaints. Copies of the current policy and Fact Sheet are available upon request. Individuals who feel they have been harassed or who seek information should contact the office at (804) 828-1347; TTY: (804) 828-1420 or visit 901 W. Franklin St., Room 114.

Students who feel they have been harassed by other students should contact the associate vice provost in the Division of Student Affairs to obtain a copy of the Student Sexual Misconduct Policy. The Academic

Campus office is located at 901 Floyd Ave., telephone (804) 828-8940. The MCV Campus office is located at Bear Hall, telephone: (804) 828-0525.

### **The Americans with Disabilities Act of 1990 and the Rehabilitation Act of 1973**

Virginia Commonwealth University is committed to a policy of equal opportunity and nondiscrimination in education and employment and compliance with the requirements of the Americans with Disabilities Act of 1990 and the Rehabilitation Act of 1973. Available publications and information can be obtained from the university ADA Coordinator, located at 901 W. Franklin St., Room 114; telephone: (804) 828-1347; TTY: (804) 828-1420.

Individuals who have identified themselves as students with disabilities should contact the appropriate Coordinator of Services for Students with Disabilities:

#### **Academic Campus**

Voice/TTY: (804) 828-2253

#### **MCV Campus**

Phone: (804) 828-9782

TTY: (804) 828-4608

### **Health Services and health insurance, University Student**

The University Student Health Services (USHS) offers quality primary health care for the treatment of acute and chronic illness. In addition to diagnosis and treatment, the service emphasizes prevention of illness through screening, counseling, and health education. Full-time students are required to pay the student health fee. Part-time students taking a minimum of three credit hours may join USHS if they choose. Payment of the fee may be presented at USHS when the part-time student seeks services.

The service is staffed by physicians, physician assistants, nurse practitioners, registered nurses, pharmacists and health educators. Services offered by USHS include general medical, allergy and gynecology clinics, pharmacy and laboratory services, after-hours emergency care, and health education and public health programs.

All educational activities sponsored by USHS are available to students, including educational literature, video cassettes, weight-reduction classes and health-

related programs on topics of interest to students.

Accidental injury and hospitalization are not covered by USHS, and students are urged to take advantage of the university-sponsored health plan. Information on this insurance program, which provides benefits to students at group rates, may be requested from USHS.

Virginia law requires that full-time students submit immunization records prior to registering for second semester. The immunization record is mailed to students upon acceptance and should be returned to the Academic Campus Student Health Service Office.

The USHS office on the Academic Campus is located in Suite 2200, Sports Medicine Building, 1300 W. Broad St. The USHS office on the MCV Campus is located on the third floor of the VMI Building at 1000 E. Marshall St., Room 305. For information, call (804) 828-8828 (Academic Campus), or (804) 828-9220 (MCV Campus).

### **Housing**

Requests for on-campus housing information should be addressed to Virginia Commonwealth University, University Housing, Gladding Residence Center, 711 W. Main St., Room 103, Richmond, VA 23284-2517, (804) 828-7666. Graduate housing is available primarily on the MCV Campus, although a few spaces are available for graduate students in Academic Campus residence halls.

In general, most graduate students live off campus because of VCU's limited amount of available on-campus student housing. Off-campus Housing offers assistance in the location of non-university controlled residences that rent to students on a nondiscriminatory basis; however, the university does not control or monitor privately operated off-campus housing facilities. This service provides free listings of available housing for VCU students, faculty and staff via computer-generated lists of rental apartments, rooms and houses; roommate requests; and houses for sale. Most listings are in the residential Fan District near the Academic Campus. Off-campus Housing also provides a selection of brochures on topics ranging from tenants' rights to Richmond apartment guides as well as information concerning telephone and utilities services. It is advisable for the student to inspect off-campus accommodations before leasing. Good quality apartments and

rooms are limited, and students should make arrangements early. An online searchable database of available apartments is provided by Off-campus Student Services at <http://www.pubinfo.vcu.edu/och>. Contact Off-campus Housing, University Student Commons, 907 Floyd Ave., Richmond, VA 23284-2032, (804) 828-6492. For more information regarding Housing Services, refer to the Web at <http://www.students.vcu.edu/housing>.

### **Identification cards**

Students should carry their VCUCards with them at all times and should be ready to show them to any authorized university official who might request identification. Students may obtain or validate their VCUCards during registration. The cards are required for numerous university functions, including borrowing books from the library and use of the university shuttle system. Any student who loses a VCUCard should contact the VCUCard Office for a replacement — a fee will be charged for replacements. See the Web site at <http://www.vcucard.com> for additional information.

### **Information Technology Services**

#### **Phyllis C. Self, Ph.D.**

Vice Provost for Academic Technology

#### **Mark D. Willis**

Executive Director, Administrative Information Technology

VCU provides a wide range of technology resources and services to facilitate the effective use and coordination of information technology-related activity across the university. These include mainframe computing, PC and server support, research and scientific computing, instructional and distance education support, Web support, voice, video and data network infrastructure and VCUCard services.

Basic services include e-mail and computing accounts; consulting in the use of computing resources; teaching short courses; advice on acquisition of computer systems; optical scanning for test grading, faculty evaluation and other surveys; and software-site licensing.

## Computing Services

### Academic Campus

P.O. Box 843008  
Cabell Library, Room B-30  
901 Park Ave.  
(804) 828-6650

### MCV Campus

P.O. Box 980016  
Sanger Hall, Room B3-015  
1101 E. Marshall St.  
(804) 828-9843

Monday through Friday 8 a.m. – 5 p.m.  
<http://www.at.vcu.edu>

Academic technology provides computing services for the research, instructional, health care and public service endeavors of VCU students, faculty and staff. AT has offices on the Academic Campus and at the MCV Campus to provide a full range of services and resources specifically designed to meet the unique needs of their users. Visit the AT Web site (listed above) for more information on computing resources and services.

## Computer accounts

Computer accounts are required to access e-mail, research and scientific computing facilities, and university information systems. Accounts are available to all VCU students, faculty and staff. E-mail accounts are available for incoming students upon acceptance. Most accounts may be created from a Web page. For details, visit [http://www.vcu.edu/it/computer\\_accounts.html](http://www.vcu.edu/it/computer_accounts.html).

## Distance Education

(804) 828-8470  
[somoore@vcu.edu](mailto:somoore@vcu.edu)

Distance Education at VCU develops and supports the university's emerging distance education plan. DE works closely with departments and schools to foster excellence in distance education programs and to advocate and promote the uses of distance education at VCU. DE facilitates the sharing of distance education resources and expertise at VCU with other universities and agencies at the state, regional, national and international levels.

## Distance Education classrooms

Equipped with a wide range of media presentation devices, Tompkins-McCaw Library (Room 2010) and Cabell Library (B-35) operate both as "smart classrooms"

and as video conferencing facilities. For details, see <http://www.at.vcu.edu/media>.

## Open-access labs

Academic Technology maintains three open-access labs for students providing access to computing facilities, the Internet and various software. For up-to-date information on the resources, software and hours of each lab, visit [www.at.vcu.edu/faq/computerlabs\\_classrooms.html](http://www.at.vcu.edu/faq/computerlabs_classrooms.html). The labs and their locations are:

### Academic Campus

Cabell Library, Room B-8 (Academic Campus main lab)  
Student Commons, Lower Level

### MCV Campus

Sanger Hall B3

### Other Labs

Several schools have lab facilities available for their students: Temple Building, School of Social Work, School of Education, etc. Students should check with their school to see what computing facilities are available to students.

## Help Desk

(804) 828-2227  
Cabell Library, B-30  
Sanger Hall, B-3  
<http://www.at.vcu.edu/helpdesk/>

The Help Desk provides assistance in solving software and computer use problems. For assistance, call the phone number or visit the Web link listed above. Walk-in service also is available.

## Computer repairs and purchases

Hardware repairs are available through Online@VCU, the technology store operated by VCU Business Services. The store also sells hardware and software, often at educational discounts, and it sells Internet accounts at discount rates. For more information, call (804) 828-7295 on the Academic Campus or (804) 828-5880 on the MCV Campus or visit their Web site at <http://www.bsv.vcu.edu/online@vcu>. For additional purchasing information, visit the Web site: [http://www.vcu.edu/it/computer\\_procurement.html](http://www.vcu.edu/it/computer_procurement.html).

## Media Support Services (MSS)

### Academic Campus

P.O. Box 843045  
901 Park Ave., Room B-40  
(804) 828-1098  
<http://www.at.vcu.edu/media>  
Monday through Thursday 8 a.m. – 9:45 p.m.  
Friday 8 a.m. – 4:30 p.m.

### MCV Campus

P.O. Box 980062  
1101 E. Marshall St., Room B1-018  
(804) 828-3400  
<http://www.at.vcu.edu/media>  
Monday through Friday 8 a.m. – 4:45 p.m.

Comprehensive audiovisual and television services include the circulation of AV equipment in support of academic activities, technical support for classroom-based AV equipment, instructional strategies using AV equipment, production and transmission of distance-learning programming from facilities on both campuses, and the reception, recording and distribution of off-air and satellite video programming. Services frequently used by students include audio- and videotape sales and duplications and production of overhead transparencies. At its Cabell Library office, Media Support Services serves as the Academic Campus service point for photographic and graphic design services offered through Creative Services.

## Research and scientific computing

<http://www.at.vcu.edu/research>

Academic Technology provides resources in support of student, faculty and staff research and scientific computing. This support includes an SGI Origin 2000, an 80-processor Linux Beowulf cluster, two SGI enterprise 420 systems, and two Sun v880 servers. These servers have extensive collections of software that support high performance computing, research database applications, and statistical, mathematical and scientific applications for researchers. Significant disk space provides support for the storage and analysis of extremely large datasets. AT provides consultative support in the use of these facilities, database design, statistical analysis and many of the software applications.

## Student Computer Initiative (SCI)

(804) 828-3018  
<http://www.vcu.edu/sci>

Technology has become the driving force of modern society. An integral part of VCU's mission is to prepare students to be competitive and to succeed in this highly technical world. VCU faculty and students increasingly rely on e-mail, the Internet, digital media and other instructional technologies to complement and enhance classroom, laboratory and studio learning. A

personal computer will enable every student to have powerful and convenient access from their home or residence hall to the rich array of learning resources available on campus and on the Web. When students enroll at VCU, they will receive a personalized computer account. With this account, they can send and receive e-mail, search and access library databases, run advanced computer programs, access lecture notes and assignments through BlackBoard, and link to important Web sites required by their courses.

Every year, the university establishes minimum specifications for computers, which are revised annually for each new entering class. Students will be able to use these specifications to aid in their purchasing decisions for personal computers. Some departments and school recommend a specific configuration from among the options outlined by the university. Students will need to check with the school or college in which they are enrolling to ensure that minimum specifications are sufficient for their course of study. SCI specifications can be found at <http://www.vcu.edu/sci>.

Virginia Commonwealth University recommends that students purchase computers from one of three manufacturers (Apple, Dell and IBM) that have been identified as conforming to the required computer specifications. Additionally, the university computer store, Online@VCU, sells systems from Apple and Dell that meet or exceed the university and departmental requirements. Technical support is assured with respect to computers purchased from these three manufacturers. Because of resource limitations, the same level of technical support will not be readily available for computers from other manufacturers.

## VCUnet

P.O. Box 842521  
327 W. Main St.  
<http://www.vcu.edu/vcunet>

VCUnet is an enterprise-wide data network designed to provide business class connectivity to university and departmental computing resources as well as the Internet. All residence hall rooms at VCU are connected. All new residence halls are designed to include network connections as part of construction.

To connect in residence-hall rooms, students will need a 10BaseT Ethernet card and an RJ-45 (UTP) patch cord. Please refer to the SCI Hardware and Software

Specifications Guide that comes with your registration packet for recommended Ethernet cards and cables. For assistance configuring workstations or to report problems in residence-hall rooms or labs, users should contact VCU Housing technical support at (804) 828-1426. Problems encountered outside of the residence halls should be reported to the support person for that area. Please see the Trouble Reporting link on the Web for more details. Information about securing personal workstations can be found at on the Web site under the Network Security link.

In order to provide an equitable computing environment that will support educational activities, academic-related network traffic receives priority over entertainment-related traffic. Please see the VCUnet web site (<http://www.vcu.edu/vcunet>) for details.

VCUnet access to the Internet from off-campus locations that do not have connectivity requires an account with an Internet Service Provider (ISP). This service is available at a VCU discount from Online@VCU, the campus technology store.

VCUnet also provides voice communications for both campuses — faculty, staff and residence-hall students — and for the VCU Health System. Services include phone, fax and modem installation and removal, long-distance service, voice mail, calling cards, equipment repair, directory publication and system consultation. Administrative customers may call (804) 828-4331 and residence-hall students, call (804) 663-6000.

## Web Services

(804) 828-2192  
<http://www.vcu.edu/web>

Academic Technology's Web Services (WS) provides management and support services for the VCU Web site and collaborates with other organizations at VCU in developing Web-based applications. The primary function of WS is to support Web publishing at VCU by providing training, consulting, online documentation and Web publishing standards. WS is responsible for the design and features of the VCU Web site, including the VCU home page. Guidelines for appropriate use of VCU computing resources are available from the Web at <http://www.vcu.edu/web/policy>. This site contains VCU Web guidelines, VCU Policy on Guidelines for Using Electronic Information Systems and Office

Equipment, and the VCU Ethics Policy on Computing.

## Mail Services

The United States Postal Service (USPS) provides self-service postal vending machines in the lobby of the Mail Services office at 1000 E. Marshall St. on the MCV Campus and in the University Student Commons on the Academic Campus. Students may mail packages through the USPS from the Student Commons Postal Center. A full-service USPS Station at Eighth and Marshall streets supports MCV Campus students. All students living in residential housing should have mail addressed to them as follows:

Student's Name  
Room Number and Residence Hall Name  
Street Address  
Richmond, VA and nine-digit Zip Code

For information of VCU Mail Services, refer to the Web at <http://www.bsv.vcu.edu/maillsrv>.

## Parking and transportation

University Parking and Transportation has offices conveniently located on both campuses. Hours of operation are 8 a.m. to 4:30 p.m., Monday through Friday. The Academic Campus office is located at 1111 W. Broad St. and the MCV Campus office is located at 1000 E. Clay St.

The Student Parking Program offers three subscriptions to fulfill the diverse needs of VCU students. Commuter student parking subscriptions provide guaranteed parking. Most facilities offer shuttle service and on-site dedicated security. Evening commuter students may purchase a discounted decal allowing parking in unrestricted facilities weekdays after 3:30 p.m. University housing students may purchase convenient parking, featuring 24-hour security coverage.

Parking decals are not required for parking in unrestricted university facilities on weekends and on university observed holidays.

Additionally, limited street parking is available to the VCU community through metered or time-limit restrictions. VCU provides its students access to GRTC bus service. A semester transit pass, which may be obtained at either office and a valid student VCUCard are required to utilize the GRTC buses without cost.

For additional information, please call (804) 828-0501 during normal business hours. Automated bulletin board information is available 24-hours a day by calling (804) VCU-PARK (828-7275). Information also is available on the Web at <http://www.bsv.vcu.edu/vcupark>.

## Preparing future faculty initiatives

The School of Graduate Studies, in conjunction with graduate faculty at the university, offers ongoing opportunities for academic and professional development. Students and faculty should check the School of Graduate Studies Web site for upcoming events: <http://www.vcu.edu/graduate>.

The School of Graduate Studies also sponsors a series of short courses for graduate students interested in pursuing careers in higher education. This series of Preparing Future Faculty (PFF) courses is modeled on the national Preparing Future Faculty program created at the Association of American Colleges & Universities. These courses introduce graduate students to the roles and responsibilities of faculty members in institutions of higher education; addresses teaching and learning issues in the college classroom and provides supervised internship opportunities.

The Preparing Future Faculty in the Professions (PffP) program complements and expands upon the basic Preparing Future Faculty (PFF) program. The PffP module consists of three components:

- a general seminar for all PffP participants.
- four "cluster seminars," each led by faculty from one of the professional areas (visual and performing arts, applied social sciences, applied physical sciences, and health sciences).
- a professional teaching internship.

At the successful conclusion of the entire PffP sequence, students who have earned a total of seven academic course credits will be awarded certificates of achievement by the PffP program. Because most PffP courses carry only one credit each, students will be able to add them to traditional course loads.

For more information on the PffP program, visit the PffP Web site at <http://www.vcu.edu/pffp>, or call (804) 828-8856.

## Courses in Graduate Studies

### GRAD 601 The Academic Profession

Short course; 1 credit. This short course is designed to introduce graduate students to the roles and responsibilities of faculty members in institutions of higher education. Through readings, discussion, and conversations with faculty members from a variety of settings, students will learn about the changing social expectations for higher education, the diverse settings in which faculty work, and strategies for developing and presenting marketable academic skills.

### GRAD 602 Seminar in College Teaching

Short course; 1 credit. This short course will focus specifically on the act of teaching. Graduate education in this country has only recently begun to address college teaching issues. While mastery of the discipline and of the research skills necessary to contribute to that discipline have long been a staple of graduate training, mastery of the knowledge and skills necessary for teaching the discipline are often neglected.

### GRAD 604 Seminar in Teaching the Professions

Semester course; 1 lecture hour. 1 credit. Prerequisites: GRAD 601 and/or 602. Designed for students planning to enter careers as faculty in professional schools. Covers the pedagogical methods common to the professions but distinct from liberal arts disciplines. Topics include: teaching and learning professional expertise; teaching styles appropriate to clinical, field or studio settings; and evaluating students' professional skills. Students must be within three years of receiving a terminal degree. Graded as "S," "U" or "F."

### GRAD 605 Professional Specialty Seminars

Seminar course; 1 credit. Prerequisite: GRAD 604. These seminars will focus on the teaching profession itself and will be organized into four sections, one for each of the following professional clusters: fine arts (such as painting, sculpture, drama, music); applied social sciences (such as social work, education, business); applied physical sciences (such as engineering and environmental sciences); and health sciences (such as medicine, pharmacy, nursing). Unlike GRAD 604, which will focus almost exclusively on pedagogy in the professions, the GRAD 605 sections will include an emphasis on preparation for the full range of faculty responsibilities. Graded as "S," "U" or "F."

### GRAD 606 Internship/Externship in Professional Teaching

Intern course; 1-3 credits. Prerequisites: GRAD 604 and 605. Students will gain experience and practice in clinical/field or studio instruction under the tutelage of a senior faculty mentor at a local institution, which most closely mirrors the institution type they would like to enter. Graded as "S," "U" or "F."

## Recreational facilities

The Cary Street Recreation Complex includes a gymnasium which features basketball, volleyball, badminton, fitness center, racquetball courts, a multipurpose field and jogging track, and outdoor basketball courts. Numerous recreational activities are offered,

including instructional sessions in fitness, weight training and informal recreation.

The MCV Campus Recreation and Aquatic Center houses two basketball courts, two volleyball courts, one indoor tennis court, one outdoor tennis court, four handball/racquetball courts, two squash courts, a fitness center, a multipurpose room and a 25-meter swimming pool with a spa.

The Stuart C. Siegel Center includes more than 34,000 square feet for the recreation component and when the main arena is used for recreation, another 45,400 square feet is available. This center also includes an aerobic/multipurpose studio; weight/cardiovascular fitness center; a multipurpose gym for indoor soccer, floor hockey, basketball and volleyball; and a Wellness Resource Center. The main offices for Recreational Sports are located in this facility.

Camping and other wilderness recreation equipment can be rented at the Outing Rental Center. In addition, students can participate in a variety of outdoor adventures through the outdoor adventure program located at the Outing Rental Center. Call (804) 828-6004 for details.

Students from both campuses may use the university swimming pools located in the Franklin Street Gymnasium on the Academic Campus and the MCV Campus Recreation and Aquatic Center on the MCV Campus. University identification is required. Graduate students also are eligible to participate in numerous intramural and club sports activities, fitness programs and personal fitness training on either campus. For specific information, students should contact the Recreational Sports staff on the Academic Campus: (804) 827-1100, or on the MCV Campus: (804) 828-6100.

## Research

While VCU is one of the leaders in teaching among institutions of higher education in the state, it also is an institution which commits a significant portion of its resources to research and scholarly activities. VCU is fully committed to the proposition that a broad-based program of research investigations enhances the teaching mission of the university, while, at the same time, it improves the quality of services provided to the community. During the fiscal year ending on June 30, 2002, the university received more than \$169 million in sponsored program support from a variety of federal agencies,

industries, and private organizations. The extensive and diverse nature of VCU's research programs is directly related to the excellence of the university's faculty. Prospective graduate students can anticipate working in a lively intellectual environment. Many faculty who are directly involved in graduate education programs are recognized nationally and internationally in their fields of endeavor.

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## Retail stores

The bookstores, conveniently located on both campuses, carry new and used books, study aids, reference materials, general books and magazines, lab apparel and medical instruments as well as snack items and other novelties.

VCU also operates a technology store, Online@VCU, that provides high quality, competitively priced computer hardware, software and supplies. Refer to the Web at <http://www.bsv.vcu.edu/retailstr> for information about services, hours and locations.

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## Services for students with disabilities

VCU is committed to providing students with disabilities an equal opportunity to benefit from all programs, services and activities. VCU complies with the requirements of the Americans with Disabilities Act of 1990 and the Rehabilitation Act of 1973.

The university does not discriminate against qualified students with disabilities in admissions or program accessibility. Students with disabilities are responsible for self-identification prior to requesting services and may do so at any time by contacting their campus coordinator and presenting documentation. Pending the receipt of appropriate documentation, the university reserves the right to deny any accommodations.

Students strongly are encouraged to self-identify and request accommodations at least four weeks prior to the first day of instruction. The university cannot guarantee that accommodations will be available on the first day of instruction for those students who choose to apply for services after the four-week period. Students with disabilities need to contact their campus coordinator of Disability Support Services to request accommodations.

## Academic Campus

**Joyce Knight**  
Coordinator

The Office of Disability Support Services, Academic Campus, is located in the Education Annex, 109 N. Harrison St., P.O. Box 842500, Richmond, VA 23284-2500. Call (804) 828-2253 (VTDD), fax (804) 828-1944.

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## MCV Campus

**Vacant**  
Coordinator  
**Sandra H. Carter**  
Student Services Coordinator

The Office of Disability Support Services, MCV Campus, is located in the VMI Building, 1000 E. Marshall St., Room 301, P.O. Box 980124, Richmond, VA 23298-0124. Call (804) 828-9782 or (804) 828-4608 TDD, fax (804) 828-4609, or e-mail with any questions or concerns [dgroebu@vcu.edu](mailto:dgroebu@vcu.edu).

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## Student Academic Support Services, MCV Campus

**Vacant**  
Director

This support is a personal service, located administratively under the Office of the Vice President for Health Sciences, designed to help individuals find ways to deal with the demands imposed by the health sciences curriculums and to help them become effective and efficient learners. Students meet with an academic skills counselor for an assessment of their learning needs. The counselor will then offer suggestions and strategies for dealing with their concerns.

SASS activities include counseling for academic self-concept issues; anxiety reduction; and learning strategies such as analyzing and organizing information, study methods, time management, test taking skills and writing skills. Limited screening for learning disabilities and attention deficits is available. Students are referred to other sources for formal evaluation if disabilities are suspected.

Services for students with disabilities for the MCV Campus are provided by this

office. For further information, refer to "Services for Student with Disabilities."

The SASS office is located in the VMI Building, 1000 E. Marshall St., Room 301, P.O. Box 980124, Richmond, VA 23298-0124; telephone (804) 828-9782 or (804) 828-4608 TDD.

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## Student Affairs, MCV Campus, Office of the Dean

**Dr. Robert L. Clifton**  
Dean of Student Affairs, MCV Campus (1981)  
A.B. 1963 University of Michigan  
M.A. 1969 Eastern Michigan University  
Ed.D. 1977 Wayne State University

The Office of the Dean of Student Affairs, MCV Campus, provides supervision for the operation of Larrick Student Center, advises the MCV Campus Student Government Association, participates in orientation sessions for each school on the MCV Campus, and is the primary administrator of the Rules and Procedures of Virginia Commonwealth University.

The dean's office is located in Bear Hall, 10th and Leigh streets, P.O. Box 980243. Telephone (804) 828-0525 or send e-mail to [rlclifto@vcu.edu](mailto:rlclifto@vcu.edu).

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## MCV Campus Student Government Association

The student body organization on the MCV Campus was formed to promote college activities; to promote a concern among students for each other and a greater identification with the university; to express a unified voice in matters that affect the best interest of the student body; and to foster a constructive relationship between the university and the community and state.

Representatives to the MCV Campus Student Government Association are elected from each class in each health science school on the basis of one representative per 40 students. SGA meetings are held monthly from September through April, except December, and are open to all MCV Campus students. The association sponsors such projects as blood drives and University Guest Day and provides a forum for discussion of student ideas and suggestions.

## Jonah L. Larrick Student Center (MCV Campus)

### James W. Miller

Director, Larrick Student Center (1985)  
B.S. 1978 University of Maryland  
M.A. 1981 Pepperdine University

The Jonah L. Larrick Student Center, located at 641 N. Eighth St., is a circular building with dining facilities on the first level and activity areas on the second level. The first floor cafeteria is available to boarding students as well as others on a cash basis. The lounge upstairs accommodates up to 375 people and is used for movies, dances, lectures, receptions, art exhibitions and other events. Offices are provided for the MCV Campus Student Government Association, the X-Ray yearbook and the MCV Campus Honor Council. Also available: separate areas for billiards and table tennis, television and listening to music.

The Student Center Board, composed of students, faculty and administrators, determines procedures, programs and priorities for the Larrick Center and helps determine student interests and needs.

To reserve activity space or for more information, telephone (804) 828-3438.

#### Larrick Center hours:

Monday through Friday	8:30 a.m. – 11 p.m.
Saturday and Sunday	1 – 11 p.m.

A variety of activities and social opportunities are offered to students on the MCV Campus at the Jonah L. Larrick Student Center. The lower level of the circular building houses a cafeteria which provides food on a contractual basis for students living in the residence halls and for off-campus students who elect to be on the meal plan. Upstairs, a large central lounge that can accommodate up to 350 people for dances, social mixers, lectures, and other functions is surrounded by smaller meeting rooms, including offices of the student center director and the MCV Student Government Association. Additional upstairs space houses a computer room, billiard tables, table tennis, television, and an area for listening to music.

## MCV Campus honor societies

MCV Campus students who excel in scholarship and leadership may be eligible for membership in honor societies related to their fields of study. In addition, MCV Campus students who meet established cri-

teria may be elected to one or more of the following societies:

- **Phi Kappa Phi** is a national honor society that recognizes and encourages superior scholarship. It accepts members from applied and professional fields of study as well as from letters, arts, sciences and humanities. The VCU chapter was installed in 1977.
- **Sigma Xi Society** is a national honor society founded for the encouragement of research in science and recognizes individuals for research achievement or promise.
- **Alpha Sigma Chi** is an MCV Campus organization founded in 1938. It recognizes those individuals who excel in leadership and service to colleagues, school and the university.
- **Sigma Zeta** is an honorary science fraternity that encourages and fosters knowledge of the sciences and recognizes attainment of high scholarship in the sciences. Gamma Chapter was installed at MCV in 1926.

## University Student Commons and Activities

The University Student Commons is the gathering place for students, faculty and staff on the Academic Campus. Located at 907 Floyd Ave. the University Student Commons provides an array of programs, facilities and services to meet the needs of daily life on campus. All the facilities and service in the University Student Commons are conveniently accessible to persons with mobility impairments.

The lower level of the University Student Commons houses the Student Activities Center, Break Point games room and the Commons Ground, a place to eat, visit with friends and access computers for a quick Web search or e-mail check. The first floor of the University Student Commons features Online@VCU, the University Career Center, as well as Park Place Food Court and the Commons Cafe.

Ballrooms and other meeting rooms, as well as offices for the University Student Commons and University Counseling Services, are located on the second floor of the building.

In addition, the University Student Commons houses an Information Center, Off-campus Student Services, a postal vending area and two Wachovia ATM machines.

Phase 3, the Commons construction and renovation project, which will add 35,151 square feet of new space, will feature a new ballroom, additional services, a renovated food court and more lounge space for students. Phase 3 is scheduled to open Spring 2004.

## Organizations

More than 170 student clubs and organizations exist on campus, reflecting the social, cultural, recreational, educational, political and religious interests of the student body. Various types of organizations include fraternities and sororities, departmental professional and interest groups, service oriented groups and numerous special interest organizations representing a wide variety of activities and interests.

A list of registered student organizations, policies affecting these groups, and information and materials necessary to form new organizations are available either online at <http://www.students.vcu.edu/commons/activities> or in the Student Activities Center, Virginia Commonwealth University, 907 Floyd Ave., Room 018, P.O. Box 842035, Richmond, VA 23284-2035, (804)828-3648.

## VCU Libraries

VCU Libraries is a vibrant community where ideas are generated, engaged and shared. It is a dynamic center of culture and knowledge, serving as a conduit for recorded information in all its forms.

VCU Libraries administers the major research libraries on both campuses and provides numerous electronic resources, federal and state documents, patents, and a wide variety of microform and media resources. The combined collections in James Branch Cabell Library on the Academic Campus and Tompkins-McCaw Library on the MCV Campus total more than 1.7 million volumes. The two libraries contain 10,200 print-journal titles and access to 8,800 electronic journal titles. Cabell Library's growing collections support the programs of the Academic Campus. The library houses more than 1.3 million volumes. The comprehensive collections of Tompkins-McCaw Library support the university's teaching and research needs in the health sciences and maintain more than 313,000 volumes. It is a designated resource library for the Southeastern states in the National Network of Libraries of Medicine.



A selective depository for U.S. government documents and a state depository for the commonwealth of Virginia, Cabell Library also is the only United States Patent and Trademark Depository Library in Virginia. The combined Government Documents collections include items available in print, microform and electronic formats.

VCU Libraries is extensively automated, with almost 1,500 databases available for searching and 175 public access workstations. A large collection of microform and audiovisual materials rounds out the libraries' collections.

Both libraries provide an assortment of services, including reference assistance from professional librarians, library orientation tours and bibliographic instruction, computer-assisted literature searches, seminars on Internet navigational tools and resources, self-service photocopiers and microform reader-printers.

The online catalog serves as the gateway to print, nonprint and electronic resources. Electronic databases and a broad array of CD-ROMs covering all disciplines constitute the backbone of VCU Libraries' electronic resources. Increasingly, many of the databases are available through the Web. The catalog links both libraries and enables patrons to determine the status of library materials. Computer workstations are strategically located throughout both libraries and staff are available to help with a variety of informational and reference needs.

Through interlibrary loan, students may borrow books and obtain photocopies of articles not owned by VCU Libraries from the collections of academic and public libraries throughout the country. VCU stu-

dents also may borrow specific books from other Richmond academic libraries by inquiring at the Cabell Library Reference Desk and Tompkins-McCaw Library Service Desk for a special borrower's pass.

Document delivery, a fee-based service to retrieve, photocopy and deliver articles owned by VCU Libraries, is available to VCU students, faculty and staff. Delivery of articles owned by other libraries is free to faculty, graduate students and first-professional students.

Media resources, located in Room 301 of Cabell Library and on the second level of Tompkins-McCaw Library, includes non-print resources, such as cassette tapes, compact discs, computer software, models, slides, and video and laser discs. Media Resource Services at Cabell Library also houses music scores. Additionally, films and videos from the Richmond Area Film/Video Cooperative are available to VCU faculty.

There are many services for persons with disabilities. Cabell Library has a wheelchair ramp to enter the building on the first floor. Accessible restrooms are on the basement, second and fourth floor levels, and elevators provide access to all floors. Special audio and visual equipment is available to aid in using library materials, including the Kurzweil "Reading Edge," a synthesized-voice reading machine; the Voyager/Visualtek Reader for enlarging printed text; and an adapted personal computer with screen magnification and synthesized voice screen reader. Staff at the Reference Desk can provide special research assistance and orientations by appointment. VCU Libraries will waive the fee for document delivery service and provide assistance with retrieving and photo-

copying materials from the collection within 48 hours of the request. Tompkins-McCaw Library has a wheelchair ramp. Accessible restrooms are available on the first floor. Elevators provide access to all floors. Specialized equipment includes an online catalog workstation with screen magnification, a Voyager/Visualtek Reader, and a large-print microfiche reader. For the physically challenged patron, staff at the document delivery service will waive the fee and provide assistance with retrieving and photocopying materials from the collection within 48 hours of the request.

All of VCU Libraries' reprographics and printing equipment is VCUCard-compatible. The VCUCard also is used for checking out library materials.

VCU Libraries is a member of the Center for Research Libraries, the Richmond Academic Library Consortium, the Association of Southeastern Research Libraries, the Richmond Area Film/Video Cooperative, the Southeastern/Atlantic Regional Medical Library Services, the Coalition for Networked Information, the National Network of Libraries of Medicine, the Scholarly Publishing and Academic Resources Coalition, and the Virtual Library of Virginia (VIVA). Visit the Web site (<http://www.viva.lib.va.us>) for more information.

VCU Libraries strives for excellence in all of these endeavors, keeping uppermost in mind at all times the importance of the highest quality service to the students, faculty and staff of the university.

For more information about VCU Libraries, visit the Web site at <http://www.library.vcu.edu>.



# Graduate Studies at VCU

## School of Graduate Studies

VCU is composed of the following academic units:

School of Graduate Studies  
Center for Public Policy  
VCU Life Sciences, including the Center for Biological Complexity  
College of Humanities and Sciences, including the School of Government and Public Affairs, the School of Mass Communications, and the Center for Environmental Studies  
School of Allied Health Professions  
School of the Arts  
School of Business  
School of Dentistry  
School of Education  
School of Engineering  
School of Medicine  
School of Nursing  
School of Pharmacy  
School of Social Work

Graduate programs are administered by the individual departments, schools and centers with assistance from the School of Graduate Studies. Major coordination of the various degree programs is performed by the University Graduate Council and the Graduate Dean's Advisory Committee, both of which are chaired by the dean of the School of Graduate Studies. The University Graduate Council is comprised of one elected faculty member from each school. The Graduate Dean's Advisory Council includes directors of graduate study from each school and center.

The Graduate Studies at VCU section of the Graduate and Professional Programs Bulletin documents the official admission and academic rules and regulations that govern graduate education at the university. The University Graduate Council determines these policies. Graduate students and faculty should also check the Bulletin Updates link on the School of Graduate Studies Web site for changes to policies and procedures that are approved throughout the academic year.

## Graduate programs

In-depth descriptions of all graduate programs at VCU are provided in the individual school and program chapters of this bulletin, as well as online at the School of Graduate Studies Web site (<http://www.vcu.edu/graduate>). This site provides links and contact information for all graduate programs offered at VCU. The Web site also provides access to the online version of the Graduate and Professional Programs Bulletin and updates that occur throughout the academic year, as well as the application to Graduate Study and complete instructions for applying to all graduate programs.

Refer to the admissions requirement chart in the reference section of this bulletin and on the School of Graduate Studies Web site for a complete listing of all graduate curricula, specializations and tracks, as well as application deadline dates and special admission requirements. Applicants are encouraged to contact the school/department sponsoring the intended program of study at the telephone numbers and/or e-mail addresses listed in the charts. Other important contact information is provided in the directory of this bulletin.

## Off-campus graduate instruction

VCU is dedicated to serving the needs of Virginians by providing off-campus graduate credit instruction when and where it is needed. Courses are offered in response to an expression of need from various locales and groups.

Off-campus instruction features the same course work available on campus, and most off-campus courses are fully degree-applicable within the admission standards of the School of Graduate Studies. Tuition for most off-campus classes is the same as other university classes; however, students in off-campus credit classes are not charged university or activity fees.

For additional information on off-campus credit instruction, contact Edward Howard,

### School of Graduate Studies Moseley House

1001 Grove Ave. • P.O. Box 843051

Richmond, VA 23284-3051

(804) 828-6916 • Fax (804) 828-6949

[vcu-grad@vcu.edu](mailto:vcu-grad@vcu.edu)

<http://www.vcu.edu/graduate>

### F. Douglas Boudinot

Dean, School of Graduate Studies

Professor, Pharmaceutics (2002)

B.S. 1978 Springfield College

Ph.D. 1986 State University of New York at Buffalo

### Sherry T. Sandkam

Associate Dean, School of Graduate Studies  
and Assistant Professor, Division of Educational  
Studies, School of Education

B.A. 1970 Longwood College

M.B.A. 1986 Virginia Commonwealth University

Ph.D. 1996 Virginia Commonwealth University

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coordinator of Off-campus Credit Instruction,  
Office of Community Programs, 920 W.  
Franklin St., Richmond, VA 23284-3062,  
telephone (804) 828-8819, or visit the Office  
of Community Programs Web site at  
<http://www.vcu.edu/ocp>.

## Admissions

The Board of Visitors, the administration and the faculty of VCU are committed to a policy of equal opportunity in education and employment without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation or disability.

### Admission requirements

General admission requirements for graduate study in the university are:

1. graduation from an accredited college or university or its equivalent,
2. except in very unusual cases approved by the graduate dean, a minimum undergraduate GPA of 2.7 on a 4.0 scale for at least the last two years of undergraduate work,
3. satisfactory scores from a current (less than five years old) standardized test commonly used and deemed appropriate by the particular discipline,
4. three letters of recommendation,
5. applicant's written statement of intent for pursuing graduate studies in a particular discipline, and
6. such additional requirements as may be established by individual programs and schools. These may include personal interviews, auditions, submission of a portfolio or other materials.

An exception to the general admissions requirements is made for students entering through the Guaranteed Admissions Program of the University Honors Program. (See the heading "Admission through the University Honors Program" in this chapter.)

### Types of admissions

Students may be admitted to graduate studies under one of the following classifications:

**Degree-seeking student.** An applicant who meets all requirements for admission to a degree program and who has been recommended by the department or school in which the applicant proposes to study may be admitted as a degree-seeking student.

**Provisional student.** An applicant who is missing an official document or test score may be admitted provisionally to a degree program, if recommended by the department and approved by the graduate dean. Pending documentation must be provided by the end of the first semester of enrollment. An applicant who has not fully met the requirements of the program or school

to which admission is sought also may be admitted to that program or school as a provisional student. Reasons for requesting a provisional admission are evaluated by the department/program and the school, and documents supporting a request of provisional admission are forwarded to the dean of the School of Graduate Studies with a request for admission. Conditions of a provisional admission for unmet academic standards must be met within one year of enrollment. No prerequisite courses taken as a provisional student may be applied toward a graduate degree. Failure to meet conditions of provisional admission will result in the student's dismissal from the School of Graduate Studies.

**Nondegree-seeking student.** An individual who wishes to take graduate courses without formal admission to a degree program is classified as a nondegree-seeking student. There is no limit to the number of credits a nondegree-seeking student may take, as long as the student's academic performance is credible. In courses where enrollment is limited, first priority is given to students admitted to the program, followed by other VCU graduate degree-seeking students. Nondegree-seeking students are not exempt from any prerequisite which may be specified for a course. A nondegree-seeking student who is later admitted as a degree-seeking student will not be allowed to apply toward a degree more than six credits earned as a nondegree-seeking student.

### Application information

A printed copy of this bulletin may be purchased from the VCU Bookstores or may be ordered by phone by calling (804) 827-0466. The Graduate and Professional Programs Bulletin, in its entirety, as well as additional information on graduate studies at VCU, may be accessed via the Web at <http://www.vcu.edu/bulletins>.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

A \$50 nonrefundable application fee must accompany each application. This fee will not be credited toward tuition payment.

An application cannot be given final consideration until all required credentials have been received. These include the following:

1. two official transcripts or the equivalent from each college or university previously attended,

2. three letters of recommendation, and
3. report of current (less than five years old) scores achieved on the Graduate Record Examination (GRE) or other entrance examinations required by the particular department or school.

These credentials should be considered as minimal. Each graduate and professional chapter of this bulletin includes detailed information concerning further admission requirements to specific programs and schools. Refer to the Graduate Admission Requirements chart in this bulletin or online for a complete listing of curricula, specializations and tracks, as well as application deadline dates and special admission requirements.

### Entrance examinations

To supplement other evidence of preparation for graduate work, most graduate programs at VCU consider in their admissions the scores from current standardized tests commonly used and deemed appropriate for a given discipline. Applicants should refer to the admission requirements chart in the reference section of this bulletin and on the School of Graduate Studies Web site for a complete listing of the specific test requirements of all graduate programs. Applicants are encouraged to visit individual department and program Web sites and to contact the school/department sponsoring the intended program of study at the telephone numbers and/or e-mail addresses listed in the chart for additional information about specific test score requirements.

Schools or programs reserve the right to accept standardized test scores older than five years at their discretion, as long as official test scores are available from the testing service. Any exceptions to the general requirement proposed by schools or programs must be approved by the University Graduate Council.

Individual exceptions to this requirement may be considered: (a) for students with a previous graduate degree, (b) for students with demonstrated competency (achievement of a grade "B" or above) in course work at the graduate level, preferably in the context of an advanced degree program and (c) for students entering graduate study through the Guaranteed Admissions Program of the University Honors Program. Any student considered for waiver of standardized testing requirements must meet all other requirements for

full admission to the program to which he or she is applying.

Common examinations used at VCU are the Graduate Record Examination (GRE), the Graduate Management Admissions Test (GMAT), the Law School Admissions Test (LSAT), and the Miller Analogies Test (MAT). These examinations will not replace other records of achievement as a basis for admission to the School of Graduate Studies, but they will offer additional evidence concerning the qualifications of students desiring to undertake graduate work.

## Admission through the University Honors Program

VCU students participating in the University Honors Program may apply for guaranteed admission to certain graduate programs before matriculation at VCU or early in their undergraduate studies. (The specific deadline for applying is set by each program.) Honors students who receive guaranteed admission may enter the programs of their choice without submitting additional application material or test scores (in some programs, test scores are required for statistical purposes only) provided they fulfill the requirements for graduation with University Honors and satisfy the curricular prerequisites of the program they plan to enter.

Prior to application for guaranteed admission to a graduate program, the student should meet with the associate director of the Honors Program. Following that meeting, the student must submit a completed graduate application form with three letters of recommendation to the Honors Program, which will then forward it with an endorsement of eligibility to the School of Graduate Studies. To be accepted into a Guaranteed Admission Program, a student must be accepted by the university, by the University Honors Program and by the admissions committee of the program the student wishes to enter. The admissions committee may require an interview. Final notification of guaranteed admission is made by the dean of the School of Graduate Studies.

For additional information, refer to the Undergraduate Bulletin, or contact the University Honors Program office at P.O. Box 843010, Richmond, VA 23284-3010; phone (804) 828-1803; or visit online at <http://www.vcu.edu/honors>.

Programs that offer guaranteed admission through the University Honors Program are:

### Doctor of Medicine

### Doctor of Physical Therapy

### Doctor of Philosophy

Anatomy  
Biochemistry and Molecular Biophysics  
Biomedical Engineering  
Biostatistics  
Human Genetics  
Microbiology and Immunology  
Pharmacology and Toxicology  
Physiology  
Psychology

### Master of Accountancy

### Master of Arts

Economics  
History

### Master of Business Administration

### Master of Education

Adult Education and Human Resource Development  
Counselor Education  
Early Childhood Special Education  
Emotional Disturbance  
Mental Retardation  
Learning Disabilities  
Severe Disabilities

### Master of Health Administration

### Master of Public Administration

### Master of Public Health

### Master of Science

Anatomy  
Biochemistry  
Biomedical Engineering  
Biostatistics  
Business  
Clinical Laboratory Sciences  
Computer Science  
Criminal Justice-Justice Option  
Exercise Science  
Genetics Counseling  
Gerontology  
Human Genetics  
Mathematical Sciences  
Microbiology and Immunology  
Nursing (except Case Management Track)  
Occupational Therapy  
Pharmacology and Toxicology  
Physics  
Physiology  
Recreation, Parks and Sport Leadership  
Rehabilitation Counseling

### Master of Science in Nurse Anesthesia

### Master of Taxation

### Master of Teaching

### Master of Urban and Regional Planning

## Application procedures

Completed applications and supporting materials must be submitted to the School of Graduate Studies. Applications submitted by mail should be addressed to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051. Applications submitted in person may be delivered to the School of Graduate Studies office at Moseley House, 1001 Grove Ave. Completed applications and supporting materials are reviewed by the graduate faculty of the intended program, and final notification of acceptance is made by the dean of the School of Graduate Studies. Admission to a graduate program may be contingent upon the successful completion of undergraduate courses, degrees or other prerequisites that may be specified by the program or school. Remedial courses will not apply toward a graduate degree. Applications and supporting materials should be received before the deadlines specified throughout this bulletin. Late applications will be considered when possible but may require provisional admission.

Students who do not apply at least one month prior to the beginning of any semester risk their financial aid eligibility in the event that the admission process is not completed prior to the first day of classes.

## Multiple admissions

Students may not be admitted to degree-seeking status in more than one graduate program without petitioning and receiving written permission from the program director or graduate committee of the school(s) in which the student is enrolled and the dean of the School of Graduate Studies.

## Undergraduate students

VCU undergraduates may enroll in 500-level courses with approval of their advisers and consent of the programs offering the courses. Highly-qualified undergraduates approaching the last semester of study may apply for admission to a graduate program. If accepted, they may enroll in two graduate courses during the last semester of undergraduate study. Their total load should not exceed 16 hours of combined credit. Credit for any course can be applied only to one degree.

## International students

The university encourages qualified international students, both nonimmigrant and immigrant, to seek admission to VCU. Complete information and application materials for international students may be obtained on written request from Virginia Commonwealth University, International Admissions, Richmond, VA, United States 23284-3043; or by phone at (804) 828-6016; or by e-mail: [vcuia@vcu.edu](mailto:vcuia@vcu.edu).

**English Language Proficiency Requirement.** To ensure maximum benefit from academic study at VCU, all non-native English-speaking applicants, regardless of immigration status, must provide evidence of English language proficiency before admission and/or enrollment in the university.

Evidence of English language proficiency is evaluated based on factors such as length of stay in the United States, amount and type of formal U.S. education, Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) scores and other standardized test scores such as the Graduate Record Examination (GRE) or Graduate Management Admission Test (GMAT).

The School of Graduate Studies reserves the right to require additional testing and study in the VCU English Language Program prior to full-time enrollment in university courses. The university offers full-time English-as-a-Second-Language non-credit program. For information on the VCU English Language Program, including fees, contact the English Language Program, Virginia Commonwealth University, Box 843043, Richmond, VA 23284-3043, United States; (804) 828-2551, or by e-mail: [oie-elp@vcu.edu](mailto:oie-elp@vcu.edu).

**Nonimmigrants (Students with temporary U.S. visas).** Due to the time constraints involved in processing applications from international students and in obtaining visas, prospective students should apply well in advance of the international application deadlines. The deadlines are April 1 for fall semester, Oct. 1 for spring semester and Feb. 1 for summer session. Students must meet specific program deadlines. The graduate dean must authorize any exception to application deadlines. All required admission documents must be submitted no later than eight weeks prior to registration if appropriate immigration documents are to be issued. Applicants who are unable to meet this credential deadline will need to defer the intended semester of entry.

Both U.S. government regulations and VCU admission policies require nonimmigrant applicants to demonstrate:

- satisfactory academic achievement,
- adequate English language proficiency, and
- ability to finance all educational and living expenses.

Refer to university and program admission requirements in this bulletin for other information requested of all applicants. An applicant must have earned a bachelor's degree from an accredited institution in the United States or an equivalent degree from a recognized foreign institution. Official academic records must be submitted.

International applicants must provide evidence of proficiency in the English language prior to admission and/or full-time enrollment in the university. An applicant may satisfy university English proficiency requirements by obtaining a satisfactory score on the Test of English as a Foreign Language (TOEFL). The university minimum TOEFL score requirement is 550 (paper-based) and 213 (computer-based); however, most graduate programs prefer a minimum TOEFL score of 600 (paper-based) and 250 (computer-based). Some graduate programs will accept satisfactory scores on the International English Language Testing System (IELTS) as evidence of English proficiency. The university minimum IELTS score requirement is 6.5.

As VCU generally does not provide financial support for graduate international students, applicants needing a student (F-1) visa or a visiting scholar (J-1) visa also must present documented evidence of available financial support to cover annual living and educational expenses while studying at VCU.

Bureau of Citizenship and Immigration Services regulations do not allow nonimmigrant students to study at VCU as special (nondegree-seeking) students. Proof of current visa type must be submitted with the application for applicants who are in the United States on student visas. F-1 students and J-1 visiting scholars admitted to VCU must submit copies of all immigration documents to the international student adviser prior to enrolling in classes.

**Immigrants (Permanent residents, resident aliens and asylum applicants).** Because immigrant applicants usually are in the United States at the time applications are submitted, these students are required to meet the same application deadlines as U.S. citizens.

If educated in the United States, immigrant students will be considered for admis-

sion under the same academic policies as those applied to U.S. citizens. If educated outside the United States, the same academic records are required as those for non-immigrant students.

VCU requires detailed information concerning U.S. immigration status. Proof of permanent residency must be submitted with the admission application.

## Financial aid

Current information on financial aid programs, policies and procedures are available on the VCU Web site at <http://www.vcu.edu/enroll/finaid>. To obtain printed materials or additional information, call or visit the appropriate financial aid office listed.

### Academic Campus

Ginter House  
Shafer Court Entrance  
901 W. Franklin St., P.O. Box 843026  
Richmond, VA 23284-3026  
(804) 828-6669  
Fax (804) 827-0060  
E-mail: [faidmail@vcu.edu](mailto:faidmail@vcu.edu)

### Schools of Allied Health Professions, Nursing and Pharmacy

Sanger Hall, Room 1-055  
1101 E. Marshall St., P.O. Box 980244  
Richmond, VA 23298-0244  
(804) 828-9800  
Fax (804) 828-2703

### School of Dentistry

Lyons Building, Room 309  
520 N. 12th St., P.O. Box 980566  
Richmond, VA 23298-0566  
(804) 828-9953  
Fax (804) 828-5288

### School of Medicine

Sanger Hall, Room 1-008  
1101 E. Marshall St., P.O. Box 980565  
Richmond, VA 23298-0565  
(804) 828-4006  
Fax (804) 827-5555  
E-mail: [jmcramer@vcu.edu](mailto:jmcramer@vcu.edu)

## eServices – online records access

Students are encouraged to use eServices, a password-protected service for viewing VCU student records online, to check the status of their financial aid application and award package. Students also may register for classes, print bills, and more. The eServices Web site is located at <https://iserver.adm.vcu.edu/students/>.

## E-mail – official method of communication

Students are required to obtain an official VCU student e-mail account within one week of the beginning of their first semester of enrollment. Students are responsible for reading in a timely fashion University-related communications sent to their official VCU student e-mail account. The Office of Financial Aid uses e-mail to provide financial aid information, to request documentation to support financial aid application data and to provide financial aid application status and award information. Information on how to set up an account is available online (go to the “Academic” section of “Getting a Computer Account” at [http://www.vcu.edu/it/computer\\_accounts.html](http://www.vcu.edu/it/computer_accounts.html)).

## Identification requirements

Students must provide picture identification, preferably a VCUCard, for in-person access to financial aid records. For the student's protection, information provided over the telephone and e-mail may be limited if the financial aid staff member is not confident of the student's identity.

## Eligibility for financial aid

Most students are eligible for some type of financial aid regardless of family financial circumstances. Basically, to receive aid from any of the federal or state student aid programs, students must:

- submit a Free Application for Federal Student Aid (FAFSA) or Renewal FAFSA designating VCU (school code 003735) to receive FAFSA results,
- demonstrate financial need, except for some loan programs,
- have a high school diploma or a General Education Development (GED) Certificate,
- be enrolled or accepted for enrollment to an eligible degree or certificate program,
- be enrolled at least half time (five or more graduate credit hours),
- be a U.S. citizen or eligible noncitizen,
- have a valid Social Security number (unless from the Republic of the Marshall Islands, the Federated States of Micronesia, or the Republic of Palau),
- meet Reasonable Academic Progress (RAP) standards as defined by the VCU Office of Financial Aid (the full

VCU RAP policy is available on the Web at <http://www.vcu.edu/enroll/finaid>),

- certify that federal and state financial aid will be used for educational purposes only,
- not be in default on a federal student loan and not owe money on a federal student grant,
- comply with the Selective Service registration, if required, and
- not be convicted under federal or state law of sale or possession of illegal drugs.

Detailed information can be found in the federal Student Guide, available in print form from the VCU Office of Financial Aid or electronically ([http://www.ed.gov/prog\\_info/SFA/StudentGuide](http://www.ed.gov/prog_info/SFA/StudentGuide)) and on the VCU Office of Financial Aid Web site (<http://www.vcu.edu/enroll/finaid>).

## Applying for financial aid

The financial aid application process for the 2003-04 academic year begins Jan. 1, 2003. All students are encouraged to complete and submit the Free Application for Federal Student Aid (FAFSA) as soon as possible after Jan. 1, designating VCU (school code 003735) to receive the results. In order to reduce problems, errors and omissions on the FAFSA, students are encouraged to apply electronically using FAFSA on the Web (available online at <http://www.fafsa.ed.gov/>). Once the FAFSA is filed, the federal processor will send the student a Student Aid Report (SAR) or electronic SAR Acknowledgement, and also will electronically send the information to the VCU Office of Financial Aid, if VCU was listed as a school to receive the data. If additional information is needed to complete processing of the application, the VCU Office of Financial Aid will send the student a request for additional information. Responding promptly to such requests will ensure timely processing of the application. Once the review of FAFSA data has been completed, the Office of Financial Aid will send the student a Financial Aid Notification.

Please note that health profession students (dentistry, medicine, nursing or pharmacy) must provide both student and parental information on the FAFSA to apply and receive consideration for Title VII grants and loans from the Department of Health and Human Services.

## Priority filing dates

The VCU Office of Financial Aid recommends electronically filing the FAFSA by March 1\*. Students should complete the FAFSA using data from their completed tax returns. If necessary, they may use estimated tax return data in order to meet the VCU priority filing date but should be prepared to submit a copy of their completed tax returns and W2 forms to VCU as soon as possible. Students will receive their Financial Aid Notification after their FAFSA application data has been verified. If students have not applied for financial aid in a timely manner, they may want to participate in the VCU Installment Payment Plan, which budgets each semester's bill over four payments. Information about this plan can be found on the Student Accounting Department's Web site (<http://www.vcu.edu/enroll/sa/payment/ipp.html>).

\* Students who do not have access to the Web may apply using the paper FAFSA, available through VCU, high schools, colleges and most public libraries. Those students completing a paper application should mail it to the federal processor by Feb. 1.

## Summer studies

Limited financial aid may be available during the Summer 2004 semester. Students applying for the summer semester must file the 2003-04 FAFSA by March 1, 2004. Students interested in financial aid for the Summer 2004 semester should obtain a VCU Summer Studies Schedule of Classes (available in March 2004) for more details.

## Study abroad

Financial assistance is available to eligible students enrolled in approved study abroad programs. All study abroad programs must be coordinated through the Office of International Education at (804) 828-8471. Students should work with a financial aid counselor to coordinate aid for their study abroad program. Information about financial aid and study abroad is available online at [http://www.vcu.edu/oie/eao/w\\_intro.html](http://www.vcu.edu/oie/eao/w_intro.html).

## Quality assurance

To ensure that information provided on the Free Application for Federal Student Aid (FAFSA) is accurate, a student's application may be selected for review at any

time during an enrollment period, and the student will be requested to provide documentation that supports the information. By signing the FAFSA, the student (and the student's parents or spouse, if applicable) agreed to furnish such documentation. If the documentation is not provided when requested, financial aid awards will be canceled and any funds already disbursed may need to be repaid.

## University bill

The Student Accounting Department sends bills for tuition, fees and other university charges to students whose financial aid will not cover their university charges. When financial aid awards (grants, scholarships and loans) are not enough to pay university charges, the remaining balance must be paid from personal funds, credit card or the VCU Installment Payment Plan. Federal Work-Study awards will not be deducted from university charges because those funds are paid directly to the student, based on hours worked. Any outstanding balance owed will hold a student from registration for courses.

## Financial aid appeals

Financial aid eligibility decisions are made using federal, state and institutional regulations and policies. Students may appeal their award offers if special circumstances warrant a review. Reasons for an appeal might include one of the following documented unusual circumstances:

- loss or reduction of employment earnings,
- disability or death of parent or spouse,
- separation or divorce,
- loss or reduction of untaxed income,
- losses due to a natural disaster,
- unusually high educational program costs,
- unusual medical expenses and/or
- dependent and child care expenses.

Any financial aid staff member can advise a student about the procedures on how to file an appeal.

## Federal financial aid refund policy

Students who receive federal Title IV grant or loan assistance and withdraw from VCU before completing 60 percent of the semester (as measured in calendar days) must have their eligibility recalculated based on the federal Return of Title IV Funds formula. This federal formula speci-

fies that a student's financial aid eligibility must be recalculated based on the aid the student has "earned" (based on the number of days that the student was enrolled or attending VCU prior to withdrawal). Any unearned aid (for the period of enrollment that the student did not complete from the date of withdrawal to the end of the semester) must be returned to the appropriate Title IV programs from which the student was awarded.

For VCU students who withdraw prior to completing 60 percent of the semester, they will have to return or repay all or a portion of the aid funds that had been disbursed to their VCU account. As a result, students who withdraw prior to completing 60 percent of the semester may be responsible for all or a portion of their tuition/fee bill that was previously paid by financial aid sources. Examples are available online (go to <http://www.vcu.edu/enroll/finaid/links> and click on "Financial aid implications if you withdraw from VCU").

## Graduate students in undergraduate courses

Students who are classified as graduate students will be eligible for federal financial aid only if they are enrolled at least half time in courses that can be applied toward their graduate degree. The Office of Financial Aid will identify all graduate students who have applied for financial aid but have registered for less than half-time graduate course work in any given semester. If the undergraduate course work for which the student has registered is considered preparatory to the graduate degree, documentation must be provided by the student's adviser or program representative to verify which undergraduate courses are required. In these cases, the student will be eligible for federal financial aid, but it will be based on the fifth-year undergraduate loan limits. Students who have been admitted to a dual degree program can take any amount of required undergraduate course-work and will still be eligible for graduate loan limits.

## Reasonable Academic Progress

To be eligible to receive financial aid at VCU, students must make Reasonable Academic Progress (RAP). RAP is a combination of qualitative and quantitative components. RAP is measured by:

- **GPA.** Generally, graduate students are expected to maintain at least a 3.0 GPA as specified by their departments.
- **Completion rate.** The completion rate is measured by the number of credit hours earned divided by the number of credit hours attempted. All students must successfully complete at least 67 percent of all credit hours attempted (withdrawals, incompletes and repeated courses also are considered attempted credit hours).

The Office of Financial Aid will perform a periodic RAP review for students who receive or apply for financial aid. The reviews are typically performed at the end of the spring semester and must be completed at least once per academic year. Students will be alerted with warning letters, whenever possible, to provide them with notice that their financial aid may be in danger of being suspended. When students fail to meet RAP requirements, they will receive suspension letters indicating that they are ineligible to receive further financial aid. Students whose eligibility for financial aid has been suspended may submit an appeal if mitigating circumstances prevented the student from maintaining RAP.

For more detailed information about the VCU Reasonable Academic Progress policy, visit the Office of Financial Aid Web site (<http://www.vcu.edu/enroll/finaid>).

## Types of financial aid

There are three basic types of financial aid: loans, grants and work-study. Each type has different features and advantages.

### Loans

In terms of total dollars available, long-term federal loan programs provide the most dollars. Federal loans must be repaid after the grace period and/or deferment periods have expired. Students must generally remain enrolled at least half-time (five credit hours for graduate students). Multiple repayment plans may be available for most federal loans. Selected loan programs include:

- Federal Direct Loan (subsidized and unsubsidized)
- Health Professions Student Loan
- Loan for Disadvantaged Students
- Nursing Student Loan



## Grants

Contact individual academic departments for information about grant or scholarship programs.

## Work-study

Work-study is a form of financial aid that pays wages for work performed through employment. Work-study positions are located on-campus and in approved off-campus locations. Hourly wages will vary depending on skills and experience. Job listings are posted online at <http://www.students.vcu.edu/careers>. When interviewing for work-study positions, students should take copies of their Financial Aid Notifications to show prospective employers. Graduate students usually work 15 to 25 hours per week.

## Graduate assistantships and fellowships

University graduate teaching and research assistantships and fellowships are awarded to continuing and newly admitted graduate students. Eligibility is based on a variety of criteria.

Special rules, contained in the VCU School of Graduate Studies Policies and Procedures Statement on Graduate Fellowships and Assistantships, apply to graduate assistants. Such awards must be coordinated with any other financial aid. Any stipend support is reported to the Internal Revenue Service and is subject to IRS rules. Refer to the School of Graduate Studies Web site (<http://www.vcu.edu/graduate>) for a copy of the policy statement. A university graduate assistant is precluded from any other type of employment and forgoes the normal student academic vacations for the period of the appointment. Graduate program directors and prospective graduate assistants should agree upon the specific conditions of employment before finalizing appointments.

Inquiry about such awards should be made directly to the school or department in which the student intends to enroll. Students in the process of applying for admission should indicate their interest in such support. Some programs include a separate application for support with the application for admission. Refer to the individual chapters in this bulletin, program Web sites, and the School of Graduate Studies Web site (<http://www.vcu.edu/graduate>) for additional information on graduate student support and funding opportunities.

## Veteran and reservist educational benefits

Available veteran and reservist educational assistance programs include:

- Montgomery GI Bill – Active Duty (Chapter 30)
- Vocational Rehabilitation (Voc Rehab, Chapter 31)
- Veterans Education Assistance Program (VEAP, Chapter 32)
- Survivors' and Dependents Educational Assistance Program (DEA, Chapter 35)
- Montgomery GI Bill – Selected Reserves (Chapter 1606)
- Tutorial Assistance Program
- VA Work-Study Program
- Virginia War Orphans Education Program (WOE)
- Diplomatic Security and Antiterrorism Assistance

Detailed information about eligibility for these programs is available on the Web (<http://www.vcu.edu/enroll/finaid>). To obtain printed material, contact:

### Veterans Affairs Office

Office of Financial Aid  
901 W. Franklin St., Room 113  
Richmond, VA 23284-3026  
(804) 828-6166  
Fax (804) 827-0060  
E-mail: [jmchambe@vcu.edu](mailto:jmchambe@vcu.edu) or [faidmail@vcu.edu](mailto:faidmail@vcu.edu)

Eligible veterans must comply with the following requirements to receive educational benefits as students.

1. The veteran must apply or be accepted into a degree- or certificate-seeking program.
2. The veteran must request certification after registering for courses each semester and each summer session from the Veterans Affairs Office.
3. The veteran may be eligible to use benefits for only those courses applied toward a degree or certificate program.
4. The veteran is not eligible to use benefits for courses taken on an audit basis. If repeating a course or taking a course with no credits, the veteran must notify the Veterans Affairs Office.
5. The veteran is responsible for ensuring that transcripts are evaluated for transfer credits to be accepted by VCU. The veteran must submit this information to the Veterans Affairs Office for transmittal to the Veteran's Administration Regional Office.
6. The veteran must notify the Veterans Affairs Office if planning to drop or withdraw from classes or stop attending VCU.

## Virginia War Orphans Education Program

The Virginia War Orphans Education Program provides educational assistance for children of certain veterans or service personnel. Applications are available at the VCU Veterans Affairs Office. Students should begin the application process at least four months before beginning studies at VCU.

Eligibility for this assistance is contingent upon the following:

1. the applicant must be no less than 16 and no more than 25 years old,
2. one of the applicant's parents must have served in the U.S. Armed Forces and must be permanently or totally disabled due to war or other armed conflict, or
3. one of the applicant's parents died as a result of war or other armed conflict, or
4. one of the applicant's parents is listed as a prisoner of war or missing in action, or
5. the applicant's parent, on which eligibility is based, has been a resident of Virginia at the time of entry into active military duty, or
6. the applicant's parent, on which eligibility is based, has been a resident of Virginia for at least 10 consecutive years immediately before date of application, or
7. the surviving parent has been a resident of Virginia for at least 10 years prior to marrying the deceased parent, or must have been a resident of Virginia for at least 10 consecutive years immediately prior to the date on which the application was submitted by or on behalf of such child for admission to any educational or training institution in Virginia.

Those eligible for the Virginia War Orphans Education Program are entitled to a tuition-free education at state-supported educational or training institutions on an annual basis. (Summer school also may be included in the annual certification of students.) Eligible students can use this benefit to pursue any vocational, technical, undergraduate or graduate program of instruction. Generally, programs listed in the academic catalogues of state-supported institutions are acceptable provided they have a clearly defined educational objective, i.e., certificate, diploma or degree.

## Graduate tuition and student fees

Students must pay all applicable tuition, room, board and other fees when due, as described in this section. Students who fail to pay these charges on time may be assessed a late payment fee. The university reserves the right to revise or alter all tuition and fees, regulations pertaining to student fees and collection procedures at any time. In addition to expenses billed by the university, students should make allowances for books, clothing, supplies, travel and other out-of-pocket costs when figuring their total yearly expenses at the university.

## Student Financial Responsibilities

Students who enroll:

- Are responsible for full payment of tuition and fees generated from their registration.
- Are responsible for full payment of all room, board and other applicable miscellaneous charges.
- Are responsible for keeping a current permanent mailing address on file with the Office of Records and Registration. Failure to receive an invoice because of an incorrect address does not relieve responsibility for timely payments.
- Are responsible for establishing an official VCU e-mail address and reading their e-mail on a regular basis, since e-mail will be used by faculty and university offices to deliver important communications.

## Full-time and part-time graduate study

Graduate students registered for nine to 15 credit hours are considered full time and are charged a flat rate for tuition and fees. Graduate students registered for more than 15 credit hours during any semester will be charged an overload tuition fee on a per credit hour basis above the full-time tuition rate. Graduate students registered for fewer than nine credit hours are charged a per credit hour rate. Graduate students fully funded as graduate assistants or graduate fellows with tuition remission must register for at least nine credit hours per semester (six credit hours during the summer if funded on a 12-month stipend). Departmental requirements may vary; therefore,

students should verify expected course loads with their graduate program directors.

Special students who hold bachelor's degrees are classified as DHG (degree-holder graduate) if they enroll in one or more graduate courses. DHG students are charged by the level of the course unless they enroll for nine or more credits, at which point they are charged at the full-time graduate rate.

## Tuition and fee schedule

Tuition and fees are categorized and described on the student accounting Web site at <http://www.vcu.edu/enroll/sa/tuition>. Questions regarding tuition and fees may be directed to the Student Accounting department at (804) 828-2228, or by e-mailing [stuacctg@vcu.edu](mailto:stuacctg@vcu.edu).

All charges are subject to change by decision of the Board of Visitors.

## University fee

This fee is used by the university to support student facilities, campus development, intercollegiate athletics and other programs. Full-time students pay a flat-rate university fee each semester. Part-time students pay this fee on a per-credit basis.

## Student activity fee

This fee is used to support social, cultural and other student activities on the Academic Campus. These activities include concerts, plays, student organizations and publications.

Full-time students on the Academic Campus pay a flat-rate student activity fee, while part-time students on the same campus pay this fee on a per-credit basis. Students on the MCV Campus are not charged this fee.

## Student Government Association fee

This fee is used to support social, cultural and other student activities on the MCV Campus. It is determined and assessed by the Student Government Association on the MCV Campus. Academic Campus students are not charged this fee.

## Student health fee

All full-time students on both campuses must pay the student health fee. Part-time students may participate in the

University Student Health Services on an elective basis by paying the student health fee. The University Student Health Services offers unlimited office visits for acute and chronic ailments, after-hours emergency room referrals and laboratory tests, among other services.

## Technology fee

The technology fee is charged to all undergraduate, graduate and professional students in all programs. Full-time students pay a flat rate. Part-time students pay a per-credit-hour rate. The fee is used to fund improved access and assistance with information technology.

## Off-campus fees

The university fee, the student activity fee, the student government association fee (except School of Social Work) and the student health fee are not charged to students taking off-campus classes.

## Special fee charges

Because of specialized programs, various schools and departments may charge each student additional fees to cover special materials, equipment breakage and other costs. For specific information about special fees, refer to the Student Accounting Department Web site or to the specific school or department section in this bulletin.

## Tuition determination and student classification

Tuition is determined by the number of credit hours a student is taking, the student's residency classification, course of study, and classification level.

## In-state residency

Eligibility for in-state tuition benefits is determined by Section 23-7.4 of the Code of Virginia. Refer to the Determination of Student Classification for In-state Tuition Purposes in the Appendix of this bulletin for the complete code.

All applicants to VCU who want to be classified as Virginia residents must complete the Application for Virginia In-state Tuition Rates included in the graduate application. The residency determination of the applicant will be conveyed at the time of admission.

New students who have been classified initially as non-Virginians for tuition pur-

poses may request a review of the initial residency determination by contacting Records and Registration/Residency, (804) 828-0366. The residency officer may request that the applicant complete a Student Supplemental Application for Virginia In-state Tuition Rates and submit supporting documents for additional clarification. Continuing students desiring a change of residency status to in-state tuition rates must submit the supplemental application along with supporting documentation. Requests and applications for a second review must be submitted to the residency officer by the last day of add/drop week for each semester; however, it is strongly recommended that applications be submitted by the appropriate deadline: fall semester, Aug. 1; spring semester, Dec. 1; summer session, May 1.

Students will be notified by mail of decisions regarding residency status. The Office of Financial Aid and the Student Accounting Department also will receive official notification of residency decisions. Any denial for a change in residency status will include procedures for appeal of the intermediate decision. Students who submit fraudulent applications, falsify documentation or conceal information will be subject to reclassification, payment of all nonresident fees owed and university discipline.

## Academic Common Market

Virginia Commonwealth University is a member of the Academic Common Market sponsored by the Southern Regional Education Board, which, in some circumstances, makes it possible for students who are residents of approved Common Market states to pay in-state tuition at VCU.

The commonwealth of Virginia participates in the Southern Regional Education Board's Academic Common Market, an interstate agreement for sharing uncommon academic programs. VCU participates in the ACM at the graduate level. Other states that participate in the ACM are Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and West Virginia. Schools in these states are able to make arrangements for residents who qualify for admission to specific programs in other states to enroll on an in-state tuition basis.

A student who has been accepted for admission into a program for which the student's state of residency has obtained

ACM access must obtain certification of residency from the higher education authority of the student's state of residency. Inquiries about the Academic Common Market should be directed to the higher education authority of the student's state of residency or to VCU's School of Graduate Studies (804) 828-6916. Additional information about the Academic Common Market is available on the Southern Regional Education Board (<http://www.sreb.org/programs/acm/acmindex.asp>) and State Council of Higher Education of Virginia (<http://www.schev.edu/students/academiccommonmkt.asp?from=parents>) Web sites.

## Student billing

The Student Accounting Department issues bills to students showing charges for the following fees: tuition, student activities fee, student government association fee, technology fee, university fee, private music lessons, school major fees, special course fees, course materials fees, dental kits, disability insurance, room rent, board fees, communication fees, student health fee and study abroad fees.

Tuition and fees for preregistered students, along with charges for room and board where applicable, are due by the beginning of each semester. All other students will be billed after the registration period and should pay upon receipt of the invoice.

Students who have sufficient financial aid to cover their charges will not be sent bills. Students with current charges of \$100 or greater are eligible to participate in the university's Installment Payment Plan, offered during the fall and spring semesters. The Installment Payment Plan distributes the cost of tuition, fees, room and board, and communications fee for the semester into four equal installments. The fee per semester is \$25, paid with the first installment. An application and information about how to sign up for the payment plan will be included with the bill.

## Drop vs. withdraw

**Drop** charges are removed to indicate that the student never attended the class. The student is not eligible to receive financial aid, and any financial aid already credited to the student's account based on the original course registration will be removed

from the student's account and may create a balance due to the university.

**Withdraw** results in the academic grade of "W." Charges are assessed and adjusted according to the University Refund Policy. Students may owe a balance to the university.

## Refund of tuition and fees

The official university tuition and fee policy applicable for the fall and spring semesters only (excluding short courses) is outlined below. Refunds are calculated on a course-by-course (per credit hour) basis, disregarding the full-time cap amounts. Students who are enrolled full-time and withdraw from courses may not receive a refund.

- Students dropping/withdrawing from courses through the first week of class will be entitled to a 100 percent refund of tuition and fees.
- Students withdrawing from courses through the second week of class may be entitled to an 80 percent refund of tuition and the university fee.
- Students withdrawing from courses through the third week of class may be entitled to a 60 percent refund of tuition and the university fee.
- Students withdrawing from courses through the fourth week of class may be entitled to a 40 percent refund of tuition and the university fee.
- Students withdrawing from courses after the fourth week of class are not entitled to receive a refund of tuition and fees.

Students in off-campus courses are subject to the same refund policy as all other university students if the class is scheduled on the regular semester schedule. If the off-campus course is shorter or longer than the academic semester, the refund dates are adjusted accordingly at the request of the Off-campus Programs Office.

The refund policy and deadlines of the English Language Program (ELP) are different from the university's refund policy for academic courses. Details of the policy may be obtained from the English Language Program Office.

A full refund for Holiday Intersession will be granted if the course is dropped before 4:30 p.m. on the day of the first class meeting. Partial refunds are not granted.

A full refund for summer tuition and applicable fees will be granted if the course is dropped no later than the day following the first day of a given class. (This policy also is applicable if the class does not meet

on two consecutive days.) Students reducing their academic course loads to fewer than full time (12 credits for undergraduates and nine credits for graduates) before the end of the last day to drop a course will be entitled to a refund of tuition and applicable fees reflecting the reduced course load. Partial refunds are not granted for the summer session. This same refund policy also applies to short courses offered during the fall and spring semesters.

Students who are financial aid recipients and withdraw from all courses prior to completing 60 percent of the semester are subject to the Federal Return of Title IV Funds Policy. For more details see Federal Financial Aid Refund Policy.

Refunds will be computed based on the actual withdrawal date certified by the Office of Records and Registration. Refunds will not be made to students who do not attend classes and have not completed the required withdrawal procedure. Refund processing may take approximately two weeks. Exceptions to this refund policy are made only in rare instances. Written application for an exception must be filed in the Student Accounting Department to the Refund Appeals Committee within five years.

Students will not be entitled to a refund of room fees if:

- they are suspended from the residence halls for disciplinary reasons,
- they voluntarily withdraw from the university residence halls but remain registered for any course(s) at the university unless clearance is granted through the Housing/Residence Education Office,

unless they have completed the withdrawal procedures through the Housing Office.

Cancellations or changes to Dining Plans will be accepted up to 4 p.m., Friday of the second week of classes.

Refer to the Room and Board Contract Terms and Conditions sheet for additional information.

Requests for refunds that are not generated from the overpayment of financial aid should be made in writing to: VCU Student Accounting Department, P.O. Box 843036, Richmond, VA 23284-3036. Refund request forms are available at the Student Services Centers, 827 W. Franklin St., Room 104 or 1101 E. Marshall St., Room 1-055.

In accordance with credit card regulations, the university will refund any credit balance that may result on a student's account as the outcome of a credit card

payment back to the credit card account. The remaining credit balance, if any, will be refunded to the student.

Students are responsible for paying any increase in charges that may occur after the generation of any refund.

## Outstanding charges

Students who fail to meet payments when due will be assessed late payment penalties and will be denied registration for future classes until they have paid all accrued amounts owed. Students with balances owed to the university will not be issued degrees, transcripts of grades, or graduate reports until all charges are paid in full.

Any communication disputing an amount owed, including an instrument tendered as full satisfaction of a debt, must be submitted to the Director of Student Accounting, Student Accounting Department, Virginia Commonwealth University, P.O. Box 843036, Richmond, VA 23284-3036.

Pursuant to Section 2.2-4805 et seq., of the Code of Virginia, and in accordance with rules and regulations promulgated by the State Comptroller and Attorney General of the commonwealth of Virginia, VCU will charge interest, costs and fees on all accounts past due.

VCU is participating in the Virginia Set-off Debt Collection Act of 1981. Under the provisions of this act, a Virginia individual income tax refund will be subject to the university's claim for unpaid balances of tuition and fees.

A student who pays a past due balance with a dishonored check may be subject to having his or her current and/or future registration cancelled. A charge is levied for all dishonored checks.

## Defense crisis tuition relief, refund and reinstatement guidelines

These guidelines apply to any operation, including a defense crisis, in which the president of the United States declares a sudden mobilization that includes members of the Virginia National Guard or the active or reserve forces of the U.S. Armed Forces who are students enrolled at VCU. Students are offered the following enrollment secession options:

1. Drop all courses before the end of the add/drop period and receive a full refund of all funds paid the university. Students will be asked to sign the drop

request form with the registrar indicating that they are not receiving a financial aid refund.

This option might best meet the needs of students who are called to active duty service during the first week of school and did not receive a financial aid refund check or direct deposit.

2. Receive a grade of Incomplete (IM – incomplete military) in one or all courses. Students residing in university housing will be released from their housing and meal contracts, and will receive a prorated refund of these charges. Students who chose to take a grade of IM will not have tuition and fees reduced for these courses because credits will still be earned for the semester. Students will have 12 months from the date that they leave the university to complete the course work and earn a course grade.

This option might best meet the needs of students who have essentially completed all course work in a class for the semester, but have yet to turn in a final project, an exam or other materials. It should be agreed upon between the instructor and the student that the remaining course work can reasonably be completed during the upcoming 12-month period.

3. Accept administrative withdrawal (WM – withdrawal military) from all courses as of the effective date of the orders to active duty. If this option is elected, a full refund of all tuition, fees and prorated room/board charges will be made. If a student received financial aid, the amount recovered to the financial aid accounts will follow Title IV guidelines.

This option might best meet the needs of students who are called to national service in the middle of a semester and have not completed 90 percent of their class requirements. This option also might best meet the needs of students who are leaving the university during the first week of class and received a financial aid refund check or direct deposit as a result of their financial aid.

**Leaving the university.** To initiate this process, the student must provide the university registrar with a copy of his/her active duty orders in addition to a printed copy of his/her course registration for that semester and indicate Option 1, 2 or 3 for each course. The university registrar will take the

appropriate enrollment action, post the appropriate grades and send a copy of the orders and a copy of the student course request statement to the director of financial aid and the director of student accounting.

**Returning to the university.** If the student returns within one year of completing their national emergency service requirement, the student may return to the university in the same program of studies without re-applying for admission. The student should begin the re-enrollment process by writing to the director of admissions regarding their intent to re-enroll.

## General academic regulations

### University rules and procedures

Each member of the VCU community has certain responsibilities, rights and privileges. These are stated in some detail in the VCU Rules and Procedures, and all students are responsible for being familiar with provisions of this document. The rules and procedures are printed in the campus calendar and also are available at the Office of the Dean of Student Affairs. This document also provides for the process whereby disciplinary action, including separation from VCU, may be taken against a member of the university community as a result of behavior which is in violation of the prohibited conduct as stated in the VCU Rules and Procedures.

Graduate students at VCU have a right to appeal actions of an academic nature. If such action involves a course grade, the Grade Review Procedures should be followed. If such action involves computing, the Computer Ethics Policy should be followed. If such action involves dishonesty, the Academic Integrity Policy for Academic Campus students should be followed.

All students enrolled in courses on the MCV Campus are subject to the Honor System of the MCV Campus and, as such, are required to sign an Honor Pledge Card. Copies of the Honor Code and Pledge Cards are available in Office of Records and Registration, Sanger Hall, Room 1-055.

In addition to those standards of conduct described in VCU Rules and Procedures and the MCV Campus Honor Code, which applies to all students enrolled on the MCV Campus, a student enrolled at the university may be dismissed from the school in which enrolled for failure to meet prescribed academic program requirements. Students appealing termination from a graduate pro-

gram/department should first pursue appeals at the department and/or the school level. After receiving a decision from the department and/or school, a student has the option of filing an appeal with the graduate dean in the process outlined in the Appeal Process for Students Terminated from a VCU Graduate Program.

VCU seeks to foster insight, imagination, creativity, resourcefulness, diligence, honesty and responsibility as well as the education of the men and women enrolled in its graduate programs. Such an enterprise can take place only where the highest standards of academic integrity exist.

Academic dishonesty is the giving, taking or presenting of information or material by students with the intent of unethically or fraudulently aiding themselves or others on any work that is to be considered in the determination of a grade or the completion of academic requirements. Students in doubt regarding any matter related to the standards of academic integrity in a given course or on a given assignment should consult with the faculty member responsible for the course before presenting the work.

### Effective bulletin

The bulletin of record for a graduate student is the Graduate and Professional Programs Bulletin in effect at the time of the student's official admission to the degree program (as specified in the student's official letter of admission). The effective bulletin contains the official requirements that the student must complete to earn the degree. A student who does not maintain continuous enrollment (as defined in the effective bulletin) must reapply to the program and will be subject to the requirements of the bulletin in effect at the time of readmission. Exception to this policy must be approved by the student's graduate program director and dean, and the dean of the School of Graduate Studies.

### Degree requirements

The minimum course requirements, rules of admission to degree candidacy, language requirements, thesis or dissertation requirements, comprehensive examinations, transfer of credits and the like are specified for each program in the graduate programs' chapters of this bulletin. Many schools, programs and departments print special brochures, student manuals and program guides which may be requested from the appropriate dean or program director.

## Advising program

Students are responsible for the proper completion of their academic programs. They must be familiar with the Graduate and Professional Programs Bulletin, including general academic regulations promulgated by individual schools and departments. The offices of the deans and department chairs, in cooperation with the advisers and faculty, endeavor to follow each student's academic progress, and students are encouraged to seek counsel whenever there is a need. If advisers are unable to resolve problems satisfactorily, they will refer students to others as deemed appropriate and necessary. In order to aid advising, students are responsible for maintaining current mailing addresses on file with the Office of Records and Registration, as well as with the schools and departments in which they are enrolled.

## Exceptions

Exceptions to graduate policies must be approved by the dean of the School of Graduate Studies. Appeals for exceptions to graduate school policies are to be made in writing by students to their graduate advisers. The advisers will forward their recommendations, along with copies of the students' appeals, to the dean of the School of Graduate Studies, who represents the University Graduate Council.

## Appeal process, students terminated from a VCU graduate program

### A. Termination process

1. Termination is initiated at program/department level by adviser/graduate program director/department chair via a special action form indicating the reason with relevant documentation attached. Reasons for termination may include but are not limited to:
  - academic ("D" or "F" in class, too many grades of "C," GPA below 3.0, failure of comprehensive exams, unsuccessful defense of thesis/dissertation),
  - discontinuous enrollment,
  - exceeding time limit,
  - honor policy violation,
  - academic misconduct, or
  - professional misconduct.
2. Request for termination is forwarded to the school dean/dean's designee who reviews the action, signs the form, and forwards it to the graduate dean.
3. The graduate dean/dean's designee reviews the action, signs the form,

notifies the Office of Records and Registration, and sends a termination letter through certified mail to the student from the graduate dean. This letter must include a statement of the student's right to appeal and inform the student that appeals must be initiated within 14 days after receipt of this letter.

## **B. Appeals process**

1. All department and/or school appeals processes should be exhausted prior to initiating an appeal to the graduate dean.
2. If the student contacts the graduate school, the student is instructed to provide the graduate dean with written notification of appeal and reasons. The student assumes the burden of proof in this appeal.
3. The graduate dean provides the graduate program director and school/college dean with copies of the student's request and asks the graduate program director/dean/department chair to provide the graduate school with their response, including copies of correspondence and any other supporting documentation that led to the termination. The graduate program director and school dean must respond to the graduate dean's request for information within 14 days.
4. The graduate dean notifies the student in writing of the decision within 14 days of receiving the information from the graduate program director and the school/college dean.
5. If the appeal is based on a grade appeal, the student may be allowed to register for courses for which the course in question is not a prerequisite, with the understanding that he/she will be dropped retroactively if the termination is upheld.

## **Student load**

Student load is the total number of credits for which students are enrolled in any semester. Degree-seeking students may be either full time or part time, dependent upon program rules. Students who are fully funded as VCU graduate assistants with tuition remission are classified as "full time" during any semester in which they enroll for nine or more credits (six during the summer if funded on a 12-month stipend). Departmental requirements vary; therefore, funded

students should verify expected course loads with their graduate program directors.

The maximum number of credits for which students may enroll in any semester without special permission is 15. More than 15 credits is an overload. More than 12 credits may result in increased tuition. Permission to enroll for more than 15 credits may be granted upon the written recommendation of the adviser, through departmental governance procedures, to the dean of the School of Graduate Studies.

Each summer course is designed to provide the equivalent of one semester's work. With careful scheduling, it is possible for students to earn as many as 15 credits during the summer if course work extends over the full summer semester calendar.

Permission to enroll for more than 15 credits in the summer semester may be granted upon the written recommendation of the adviser through departmental governing procedures to the dean of the School of Graduate Studies.

Summer success is predicted on the academic standard of one credit per week. Six credits in five weeks or nine credits in eight weeks are considered a normal load, but VCU does not permit six credits in four weeks or nine credits in six weeks. Suggested scheduling combinations are printed in the Summer Schedule of Classes or are available online at <http://www.vcu.edu/schedule>.

## **Attendance and continuance policies**

Any person engaged in any form of study at VCU that involves use of university facilities, laboratories/studios, libraries or who is supervised by or consults regularly with a faculty member concerning graduate work on a project, work of art, thesis or dissertation must register formally for a course while engaged in these activities. A graduate student who has completed course requirements for a degree must register at VCU each semester until the degree is awarded. Departments or schools will determine the number of hours for which students must register for each semester as part of their continuous registration policies.

Once admitted to a degree program, a graduate student is expected to enroll each semester. A student admitted to a program or track not requiring a project, work of art, thesis or dissertation must register for at least three semester hours each calendar year.

Instructors are responsible for clearly informing students in writing of the atten-

dance requirement for each course and the consequences of poor attendance. Students must abide by the requirements as announced in each separate class even though the requirements may vary widely among courses.

## **Residence for Ph.D. programs**

At many universities, doctoral students are required to maintain at least one to two years of continuous full-time enrollment or "residence." At VCU, each doctoral program will establish its own residency requirements.

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## **Change in registration**

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Once a student has registered for classes, changes in registration must be made according to the procedures listed below. Whenever a student makes any change in registration, the student should keep a copy of the new schedule as verification of the change. Changes in registration may affect financial aid. Students are advised to consult with a financial aid counselor before making any changes to their enrollment status. See the "Financial Aid" section of this chapter for detailed information.

## **Cancellation of registration**

To cancel registration a student must notify, in writing, the Office of Records and Registration before the end of the "Add-Drop" period, or drop all classes using the Web Registration System. Refunds are issued in accordance with procedures described under the refunds section of this chapter. For re-admission guidelines refer to the admission section of this chapter.

## **Leave of absence and withdrawal policies**

**Leave of absence.** Students may request a leave of absence from a program through written appeal to their advisers. The adviser will forward the request, following departmental governance procedures, along with a recommendation to the dean of the School of Graduate Studies who will respond for the university. Students who do not register for courses for more than one calendar year and who have not been granted a leave of absence must reapply for admission to VCU and to the graduate degree program.

**Withdrawal from the university.** To withdraw officially from VCU, a student must submit a complete Official Withdrawal Form to the Office of Records and Registration before the end of the eighth week of classes. The Official Withdrawal Form is obtained from Office of Records and Registration, 827 W. Franklin St., Room 104. Failure to complete this form may result in the assignment of failing grades in all or some of the courses.

The student's permanent academic record will indicate a grade of withdrawn ("W") for all courses in which the student was enrolled.

**Health-related withdrawals.** While graduate students are expected to work toward completion of their degrees without interruption, health-related problems may necessitate withdrawal from the university.

- Some schools require a statement from a physician indicating the nature and severity of the condition, when a student should stop attending classes, and the estimated date of return to school.
- In the event that a student's health problem poses a danger to the student, to patients or to others with whom the student may come in contact and the student is unable or refuses to initiate steps to withdraw as stated above, administrative withdrawal of the student may be made by the dean of the School of Graduate Studies upon consultation with the appropriate faculty and a qualified physician.
- Because curricular and course content changes may occur and a student's progress toward a degree may be affected adversely because of an extended absence, specific time periods may be imposed by individual schools with respect to the length of time allowed for absence from school. If there is a delay in return beyond the allotted time period without written consent of the dean of the School of Graduate Studies, the student may petition for return with advanced standing.
- Some schools require that prior to return to school, the student must submit to the dean of the School of Graduate Studies a statement from a physician. This statement should document that the condition that necessitated the withdrawal has been corrected to a point where the student can complete successfully all curriculum requirements with reasonable accommodation including classroom,

laboratory, clinical and fieldwork experience.

## Immunization requirements

VCU requires that all full-time students supply validated immunization records to University Student Health Services. This requirement must be completed prior to registering for second semester. Failure to meet these state law requirements will result in a hold placed on the student's second semester registration. The hold can be removed only upon receipt of the student's documented records.

The immunization record must be completed fully and accurately and also must be accompanied by documentation that the vaccines were given. This completion may be done in several ways. For example:

1. students may have their physicians transfer the information from their medical records and sign the forms verifying their accuracy, or
2. students may complete the forms using information received from their local health departments or from the armed services, but they then must attach validated copies of supporting documentation.

Many high schools require validated immunization records from students. If students recently have graduated from high school, their immunization records may still be available. They may request that the high school provide them with a copy of their immunization records.

If students cannot provide documented evidence of full immunization according to VCU guidelines, then the students must see their family physicians or health departments and receive updated immunizations. Most city and county health departments offer immunization clinics (Richmond City Health Department, 500 N. 10th St., Room 114).

Immunity to the following diseases must be documented as specified on the forms supplied by the School of Graduate Studies with the formal offer of admission.

**Tetanus.** Documentation of (1) is requested. Documentation of (2) is required. (1) Primary immunization series, including month/day/year of each dose, and (2) Tetanus/diphtheria (Td) booster (month/day/year) within the past 10 years.

**Diphtheria.** Documentation of both (1) and (2) is requested. (1) Primary immunization series, including month/day/year of each dose, and (2) Tetanus/diphtheria

(Td) booster, including month/day/year within the past 10 years.

**Polio.** (1) Primary immunization with a total of three doses of OPV (oral Sabin) or (2) primary immunization with a total of four doses of IPV (injected Salk). Note: Documentation of prior vaccination against polio, including month/day/year of each dose, is requested; however, if not completed in the past it is not recommended that the student complete the primary polio series unless the student is less than 18 years old or is planning travel to an area endemic or epidemic for polio.

**Rubeola (Measles).** Documentation of one of the following is necessary: (1) Born before 1957 and, therefore, considered immune, (2) two doses of the measles vaccine both administered after 1967 and given after the first birthday at least one month apart (document month/day/year), (3) physician's certification of diagnosis of measles including month and year of occurrence, or (4) documentation of immune titer proving immunity. Note: Measles vaccine given before 1968 is not acceptable.

**Mumps.** Documentation of one of the following is necessary: (1) mumps vaccine given after age one, month/day/year documented, (2) copy of report of immune titer, proving immunity, (3) physician's certification of diagnosis of mumps, including month and year of occurrence or (4) birth prior to 1957 (presumption of immunity).

**Rubella (German Measles).** Documentation of one of the following is necessary: (1) Rubella vaccine given after one year of age (document month/day/year) or (2) copy of report of immune titer proving immunity. Note: A history of disease is not acceptable. Rubella vaccine given before June 9, 1969 is not acceptable.

**TB Skin Test** (ppd) must be performed at University Student Health Service Office once student is attending classes.

**Meningococcal vaccine** is recommended to freshmen students residing in dormitories. The vaccine is available to any student wishing to reduce their risk for the disease.

Students with questions should contact the immunizations staff of University Student Health Service.

### Academic Campus

Suite 159, Gladding Residence Center  
711 W. Main St.  
Richmond, VA 23284-2022  
(804) 828-8828  
Fax (804) 828-1093

## Change of discipline

Students wishing to change to a graduate discipline outside their present programs should obtain new application forms from the School of Graduate Studies. Generally, they will have to submit new applications to the new program with all material required of new applicants. The dean of the School of Graduate Studies will work with the administrators of the two disciplines to facilitate the admission process for eligible students.

## Transfer credit

Generally, a maximum of one third of the didactic hours required for a master's degree may be transferred from another VCU program or outside institution and, if not applied previously towards another degree, may be applied towards a degree. A maximum of 25 percent of course work other than research applied toward all doctoral programs at VCU may be transferred from another VCU program or outside institution if not previously applied toward another degree. Acceptance of transfer credit is made at the school level. (Various schools may have more stringent requirements.)

All transfer work must be at the "A" or "B" grade level from an accredited institution or university. "Credit" or "pass" grades can be accepted only if approved by petitioning the Graduate Advisory Committee or equivalent of the student's school or college. Students must be in good standing both at VCU and at the institution from which the credits were earned. Some programs will not accept credits earned as a nondegree-seeking graduate student for transfer. VCU will not accept credits which do not apply to a graduate degree at the offering institution for transfer nor will it accept credits from unaccredited institutions for transfer.

## Thesis/dissertation examinations

The VCU School of Graduate Studies Thesis and Dissertation Manual, as developed by the University Graduate Council and VCU Libraries, serves as a guide for the preparation of the graduate theses and dissertations for graduate students in all programs within the university. The manual is available at the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

General regulations applying to thesis/dissertation committees and competency examinations are as follows.

A graduate advisory committee shall be appointed for each candidate for a master's degree from whom there is a requirement to produce a thesis or its equivalent in the form of a research project, performance, exhibit or other production. The committee will coordinate and supervise the preparation of the thesis or its equivalent. The committee shall have a minimum of three faculty, one of whom should be from a discipline other than the discipline of the candidate. The chair of the committee will be designated as the candidate's faculty adviser. Master's candidates for whom a thesis or its equivalent is not required will have an adviser appointed by the department.

A graduate dissertation committee shall be appointed for each doctoral candidate. The committee will have a minimum of four faculty members, including a chair, who will serve as the candidate's faculty adviser. At least two members must be from within the candidate's discipline and at least one from another discipline.

Upon satisfactory completion of all program requirements for admission to candidacy, the doctoral matriculant will take written and/or oral comprehensive examinations administered by the student's major department or school. Successful completion of the examinations shall entitle the student to advance to doctoral degree candidacy status. The candidate is then allowed to proceed with the research and preparation of the dissertation and any other doctoral degree requirements designated by the department.

In the event of failure, the student may be permitted to retake the comprehensive examination one time only. The re-examination requires the approval of the appropriate graduate program committee.

All research, thesis and dissertation credits taken as part of the final project (thesis/dissertation/project) for awarding a graduate degree are to be graded each semester as "S," "U" or "F." An individual department may terminate a student who does not progress satisfactorily as indicated by a "U" grade in research, thesis/dissertation/project course work. A student who receives a final grade of "F" in the thesis or dissertation will be terminated from the graduate program.

The final date for completion of a graduate thesis/dissertation is the last day of classes of the semester for which the student has applied to graduate. (See the cal-

endar in the front of this bulletin for exact dates.) By this day, final copies of the thesis/dissertation with all appropriate signatures must be submitted to VCU Libraries for binding. The graduate degree will not be awarded nor will the graduate diploma be released until this material has been submitted to the library for binding. Students should contact their graduate program directors regarding internal schedules for submission of copy, defense and approval.

## Electronic theses and dissertations

Electronic Theses and Dissertations (ETDs) are digital representations of the traditional work completed by graduate students in partial fulfillment of requirements for graduate degrees. An ETD can be a simple textual document converted to a standard electronic format such as Adobe Portable Document Format (PDF) or a complex combination of images and formats.

Students who complete their dissertation proposal defense or who have approval from their advisers and faculty committees to proceed with their studies will be eligible for inclusion in the ETD pilot program. The purpose of the pilot program is to test the university's ability to prepare students and faculty to submit theses and dissertations as electronic files on a small scale before recommending that the university consider making this option available to all graduate students.

The objectives of the ETD Project are to offer several advantages over traditional paper-based documents:

1. **To empower students** to convey a richer message through the use of multimedia and hypermedia technologies.
2. **To improve graduate education** by allowing students to produce electronic documents, use digital libraries and understand issues in publishing.
3. **To increase the availability of student research** for scholars and preserve it electronically.
4. **To lower the cost** of submitting and handling theses and dissertations.
5. **To empower universities** to unlock their information resources.
6. **To advance digital library technology.**

Complete information about the ETD Pilot is available online at <http://www.vcu.edu/graduate/etdfaq.html>.



## Satisfactory academic progress

Students must continue to make satisfactory progress toward their degrees. Unsatisfactory grades and unprofessional conduct are areas that may warrant review for possible termination from the program.

Specifically, a student will receive no credit for a course in which a grade of less than a "C" is given.

At the end of each semester, graduate faculty advisers and program directors will review the academic progress of all graduate students in their programs. The academic standing of any graduate student who receives multiple grades of "C" or below or the grade of "U" (Unsatisfactory) on required graduate course work will be reviewed for possible action. A graduate student who receives multiple grades of "C" or below will be reviewed for possible termination from the program. Although the grade of "U" is not included in the calculation of the graduate GPA, graduate students who receive multiple grades of "U" will be considered for possible termination.

## Graduation requirements

Candidates for degrees are eligible for graduation upon completion of all academic requirements in effect at the time of the first registration, provided the students are continuously enrolled and provided the requirements are met within the time limit specified by the school or program. Students failing to satisfy the time requirement and who are readmitted to a program shall satisfy requirements in effect at the time of reacceptance into the degree program.

All degrees are conferred by the VCU Board of Visitors upon recommendation of the graduate faculty. Degrees are granted at the close of the semester or summer session in which students complete their work. Degrees will not be granted unless all financial obligations have been resolved with VCU's accounting office. No degrees will be conferred unless students make formal application for graduation. **A student must be enrolled at the time of application (i.e., the semester in which the student graduates).**

Application forms may be obtained from the Office of Records and Registration. Some schools require additional forms which must be cleared through the dean's office of the school in question.

Graduation applications must be submitted by students to their advisers or deans no

later than the dates indicated on the calendar appearing in the front of this bulletin. Students should schedule conferences with their advisers well ahead of the deadline and should note that the application requires the approval of the adviser, the department chair or the school director of graduate studies, and the dean. **Students may not apply the same credits towards two master's degrees.**

Graduate credit hours earned toward a VCU certificate may be applied to degree requirements for master's or Ph.D. programs. The determination of the acceptability of specific courses to be used for both the certificate and the graduate degree will be the responsibility of that master's or Ph.D. program or school.

At least one half of the required courses in a program will be those designated as exclusively for graduate students. The GPA for graduation must be based on all graduate courses attempted after acceptance into the program.

In addition to the specific requirements listed by department, the following general requirements must be met for graduation. Degree applicants:

- must apply for graduation by the dates specified in the University Calendar;
- must have achieved an overall GPA of 3.0 ("B"); and
- must not have received a grade of "C" or below on more than six semester hours of course work or 20 percent of the total cumulative number of hours completed, whichever is greater.

The total number of semester credits required for graduation depends upon the major. Specific information may be found under the degree program descriptions.

## Re-applying for graduation

Candidates who do not graduate at the end of the semester for which they have made applications must reregister and re-apply.

**Students must be enrolled at the time of application/re-application (i.e., the semester in which the student graduates).**

## Graduation checklist for all graduate students, graduate student advisers and graduate program directors

In addition to all program degree requirements, each graduate student must meet the following University Graduate Council criteria for graduation:

- Overall graduate GPA greater than 3.0.

- Graduate GPA based on all graduate course work attempted.
- For repeated courses, both the original grade and the repeat grade included in the calculation of the GPA.
- No more than six semester hours or 20 percent of the total semester hours attempted (whichever greater) at the "C" or below level.
- No course work approved transfer below the grade of "B"; no course work approved for transfer included in the calculation of the GPA.
- 50 percent of the required course work designated exclusively for graduate students (600 or higher level at VCU).
- All incompletes (I) converted to a letter grade by the last day of class of the semester in which the candidate plans to graduate.
- All grades of Continued (CO) converted to a letter grade by the last day of class of the semester in which the candidate plans to graduate.
- All course work taken within the prescribed time limits (master's, five years with two possible one-year extensions; Ph.D., seven years with any extensions approved by the graduate school).
- Candidate enrolled at the time of application/reapplication to graduate (i.e., the semester in which the candidate plans to graduate).
- All requirements for thesis/dissertation (if applicable) completed by the last day of class of the semester in which the candidate plans to graduate, including:
  - Final defense of thesis/dissertation.
  - Signature sheet with all approval signatures, including the Graduate Dean's.
  - Required copies submitted to VCU Libraries, with appropriate forms and fees, for binding, copy-writing (if applicable), etc., according to instructions in the University Graduate Council's Thesis/Dissertation Manual and program/department/school handbooks. (Students should confirm with advisors/program directors regarding internal schedules for submission of copy, defense and approval.)
  - Submission of Survey of Earned Doctorates to Graduate Dean (Doctoral students only).
- Students must settle all financial obligations with the VCU Office of Student Accounting.

## Time limit for completion of requirements and eligibility of courses

The time limit for a graduate degree will not extend beyond a period of seven years, which, at the master's level, includes five years with two possible one-year extensions which may be granted, upon written petition through the adviser or graduate program director, by the dean of the School of Graduate Studies.

Course work completed before matriculation and applied toward the degree, including course work at VCU and that transferred from other institutions, will be evaluated by the program/department to determine whether it can be used to fulfill degree requirements. For course work which was taken more than seven years prior to the completion of the VCU degree, the program/department will evaluate the course work for acceptability and report those courses deemed acceptable to the dean of the School of Graduate Studies.

## Grades

### Grade reports

Final grade reports are sent to students at the end of each semester. Grade reports are mailed to the official mailing address on file. Students must submit in writing any change of address to the Office of Records and Registration, P.O. Box 842520, Richmond, VA 23284-2520.

### Transcripts

Official transcripts of a student's academic record will be issued only by the Office of Records and Registration upon written request of the student. Transcripts given directly to students do not carry the university seal and are not official. The seal is attached when the transcript is mailed directly from the university to the receiving party.

### Repeated courses

Students receiving grades below "B" shall repeat a course only upon the advice of their program directors. **Both the original grade and the repeat grade shall be included in the calculation of the GPA.**

### Grade review procedure

If a student thinks that a grade is inaccurate, the situation should be discussed with the faculty member. This will allow the

faculty member to explain how the final grade was determined and, if an error is detected, to submit a change of grade.

If the student still thinks that the grade was assigned unfairly, a written appeal should be submitted to the department chair. Upon receipt of the written appeal, the department chair shall provide the student with a copy and explanation of the Grade Review Procedure and shall ensure that the requirements of the Grade Review Procedure are followed.

If the department chair is unable to resolve the complaint, then the dean of the school in which the course was offered will form a grade review committee as described in the Grade Review Procedure policy and will submit its decision to the dean of the school. The decision communicated by the dean of the school in which the program resides is the final decision and will be distributed to the student, faculty member(s) and department chair.

In cases concerning grades awarded for the fall semester, the written appeal must be submitted to the department chair no later than 30 calendar days after the beginning of the following spring semester. In cases concerning grades awarded for the spring semester or summer sessions, the written appeal must be submitted no later than 30 calendar days after the beginning of the following fall semester.

### Grading system

Work quality is measured by the four-point grade system with the following equivalents:

Grade symbol and meaning	Grade-point value per semester credit
A	4.0
B	3.0
C	2.0
D	1.0
F	0.0
P/F (Pass/Fail)	0.0
PR	0.0
S/U (Satisfactory/Unsatisfactory)	0.0

All other grades are temporary, carry no credit and are not used in the computation of a GPA. Refer to the following pages for an explanation of the use of the grades of satisfactory and unsatisfactory in relation to thesis/dissertation/research classes.

The number of grade points earned is computed by multiplying the grade-point value for the letter grade by the number of semester credits for the course. As an example, a student receiving an "A" (i.e., four

grade points) in a three-credit course receives 12 grade points.

The grades of accepted transfer courses are not included in the computation of the VCU GPA. Graduate students are not designated as special honors graduates (i.e., cum laude, magna cum laude, summa cum laude) on transcripts or diplomas upon completion of their programs.

No graduate student shall be awarded degree credit for remedial work. Students advised to take any level course for remedial work should be notified in writing that the course credit shall not apply to the degree they are pursuing. Other bodies may rule later, should the student wish to apply the credit to some other degree.

### Grade of audit (AU)

Class size permitting, students may register for courses on an audit basis. A student may register for audit only during add/drop and late registration periods as a new registration and not as a change from credit to audit. Auditing a course means a student enrolls in a course, but does not receive academic credit upon completion of the course. A student who registers on an audit basis is subject to attendance regulations of that class and may be administratively withdrawn by an instructor for a violation of class requirements for audit students, before or after the normal eight-week withdrawal deadline. A student who registers for audit may be subject to other course requirements at the discretion of the instructor. Audit students are charged the regular rate of tuition and fees. An audit course is counted as part of the student's semester load in terms of classification as a full-time student. Courses taken for audit, however, do not satisfy minimum enrollment requirements for students receiving graduate teaching or research assistantships, graduate fellowships, or university graduate scholarships.

### Grade of continued (CO)

The grade of "CO" may be assigned as an interim grade for those courses which run over several grade reporting periods. The "CO" indicates that the course is not expected to be completed in a single semester and that students must reregister for the course. Upon completion of the course, a final grade will be assigned to the current semester, and the previous "CO" grade(s) will remain. This grade may be assigned only in courses approved for such grading.

## Grade of incomplete (I)

If because of circumstances beyond their control, students are unable to meet all the requirements of a course by the end of a semester, the mark of incomplete ("I") may be given. The awarding of a mark of "I" requires an understanding between instructor and student as to when and how the course will be completed. This understanding must be recorded on an Incomplete Grade Assignment Form which is submitted instead of a final course grade. The maximum time limit for submission of all course work necessary for removal of an incomplete is the end of the last day of classes of the next semester following the semester in which the incomplete was incurred (i.e., an incomplete awarded in the fall semester must be converted by the last day of classes in the spring semester, and an incomplete awarded in the spring or summer session must be converted by the last day of classes in the fall semester). At that time, an unremoved grade of incomplete is changed automatically to a failing grade. Individual departments and schools may have more stringent time limits. An extension of the time limit is possible, but must be approved, prior to the expiration date stated above, by the instructor and the dean of the school through which the course is offered. Written approval indicating the new time limit must be filed with the dean of the School of Graduate Studies.

## Grade of pass (P)

This grade is awarded for certain courses to denote satisfactory completion of requirements. Courses assigned the grade of "P" will not be computed in the GPA.

## Grade of progress (PR)

The mark of "PR" may be assigned only in courses approved for such grading. Unlike the mark of "I," "PR" will not automatically be changed to a failing grade at the end of the succeeding semester.

## Grades of satisfactory (S), unsatisfactory (U) or fail (F) in research, thesis and dissertation courses

All research, thesis, and dissertation credits taken as part of the final project (thesis/dissertation/project) for awarding a graduate degree are to be graded each semester as "S," "U" or "F." There is no limit to the number of these credits a student may take while pursuing completion of the degree as long as the student receives a grade

of "S" for each credit. An individual department may terminate a student who does not progress satisfactorily as indicated by a "U" grade in research, thesis/dissertation/project course work. A student who receives a final grade of "F" in the thesis or dissertation will be terminated from the graduate program.

## Grade of withdrawal (W)

The grade of "W" indicates that the student has officially withdrawn from a course or has been dropped for nonattendance. No student who has officially withdrawn from a course or who has been dropped for nonattendance may attend subsequent meetings of the course.

## Course listings

### Identification of symbols

I	A course offered in the first semester
II	A course offered in the second semester
I, II	A course offered in each semester
I and II	A course continued through two semesters
S	A course offered in summer sessions

## Course interpretation

A single number listing for a course, such as MGMT 648, indicates that it is a one-semester course and may be offered each semester or only one semester each year.

Courses listed with a double number, such as THEA 603, 604 and designated as semester courses, consist of two one-semester courses, either semester of which may be taken without the other.

Courses listed with a double number, such as APPM 575-576, are designated as continuous courses and consist of two one-semester courses, the first of which can be taken without the second, but the second of which cannot be taken without the successful completion of the first.

The university reserves the right to withdraw any course or program.

## Course numbering

All schools and programs within VCU use the following course numbering system. All course numbers consist of three digits (XXX). The first digit relates to the course level as follows:

## 0XX noncredit courses

Courses offered for students to make up deficiencies in previous training or to improve certain basic skills prior to full-time enrollment in undergraduate credit courses.

## IXX and 2XX undergraduate, lower level

Courses with these numbers are offered primarily for undergraduate students and may not be used for graduate credit, although graduate students may be required to register for courses at this level to gain a necessary foundation for other course work.

## 3XX and 4XX undergraduate, upper level

Courses offered for advanced undergraduates and usually constitute the major portion of specific program work leading to the baccalaureate degree. On occasion, students will be advised by their graduate advisers to enroll in prerequisite 4XX courses. Graduate programs can require that 400-level courses be taken, but credit hours in these courses cannot count towards the graduate degree or in the graduate grade point average (effective fall 2004).

## 5XX introductory graduate courses

Graduate students enroll for credit in these courses through the normal graduate advising system. Departments may limit the number of 500-level courses applicable to a graduate degree program. Advanced undergraduates may enroll in these courses for credit with consent of the offering department. Credit is applicable toward only one degree.

## 5XX professional graduate courses

**First year, first professional (medicine and dentistry).** Courses normally open to students enrolled in the M.D. and D.D.S. programs. Certain courses of this group may be designated by the department and approved by the University Graduate Council for graduate credit.

## 6XX, 7XX and 8XX graduate courses

Graduate students enroll for credit in these courses through the normal graduate advising system.

## 6XX and 7XX professional graduate courses

**6XX Second year, first professional (medicine, dentistry and pharmacy).** Courses normally open only to students enrolled in the M.D., D.D.S., and Pharm.D. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

**7XX** Third and fourth year, first professional (medicine, dentistry and pharmacy). Courses normally open only to students enrolled in the M.D., D.D.S., and Pharm.D. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

# Interdisciplinary and Cooperative Graduate Studies

## Master of Interdisciplinary Studies Program

The Master of Interdisciplinary Studies Program allows students to combine regular graduate studies in two or more selected disciplines, including cooperative ventures with other approved colleges and institutions. The program is intended for graduate students who wish to pursue a clearly defined, multidisciplinary program rather than a professional curriculum or a specialization in a traditional discipline.

Opportunities for interdisciplinary study in the Master of Interdisciplinary Studies Program include tracks in environmental studies, off-campus interdisciplinary arts and other individual tracks as developed with the coordinator.

## Individualized M.I.S. programs of study

### Sherry T. Sandkam

Associate Dean, School of Graduate Studies and Director, Master of Interdisciplinary Studies Program  
Ph.D. Virginia Commonwealth University  
Higher education, credentialism.

Before entering the program, students identify two or more disciplines in which to pursue graduate study. They then complete regular graduate courses within each of the chosen disciplines plus additional electives in other fields. When regular course work is completed, students select a special project for additional study and complete three to six credits of approved independent study, special topics, directed study or thesis.

## Admission requirements

To be admitted to the Master of Interdisciplinary Studies program at VCU, students must provide the following specific requirements in addition to the general requirements for graduate admissions stated in the Graduate Studies at VCU chapter of this bulletin:

- an overall minimum 2.8 GPA (on a 4.0 scale) in the last 60 credits of undergraduate work or, in some cases, a minimum 3.0 GPA in at least nine hours of graduate work;
- a statement explaining the kind of interdisciplinary curriculum desired and specific areas of study intended.

**School of Graduate Studies**  
1001 Grove Ave. • P.O. Box 843051  
Richmond, VA 23284-3051  
(804) 828-6916 • Fax (804) 828-6949  
<http://www.vcu.edu/graduate>

### Dr. Sherry T. Sandkam

Associate Dean of Graduate Studies and Assistant Professor, Division of Educational Studies, School of Education  
Director, Master of Interdisciplinary Studies Program  
Ph.D. 1996 Virginia Commonwealth University

### Michael H. Drought

Associate Dean for Student Affairs and Director of Off-campus Graduate Programs,  
School of the Arts  
M.F.A. University of Wisconsin

### Gregory C. Garman

Director, Center for Environmental Studies  
Ph.D. University of Maine

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

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## Degree requirements

In addition to the general requirements stated in the Graduate Studies at VCU chapter of this bulletin, Master of Interdisciplinary Studies Program students must complete a minimum total of 39 graduate semester credits, including the following:

- three to six semester credits of approved directed research, independent study, special project or thesis work
- at least nine and not more than 15 graduate-level semester credits in each of at least two disciplines; no more than 15 credits in any one discipline (exclusive of the directed research, independent study, special project or thesis requirement) may be applied toward a master of interdisciplinary studies degree

## Transfer credits

Up to six semester credits of graduate courses may be transferred into the Master of Interdisciplinary Studies Program from institutions other than VCU (nine from Virginia State University). All such transfer credits, however, must conform to the regulations stated in the Graduate Studies at VCU chapter of this bulletin.

## Off-campus art programs

### Michael H. Drought

Associate Dean for Student Affairs and Director of Off-campus Graduate Programs, School of the Arts  
M.F.A. University of Wisconsin  
Painting.

The School of the Arts and the Office of Community Programs work together to offer off-campus graduate art classes at a variety of sites from the Washington, D.C. area to Virginia Beach, Va. Both studio art and art education courses are offered. Open to all qualified students, these courses may be used for personal enrichment, license renewal or as part of a degree program. Two degrees are available off campus: the master of art education and the master of interdisciplinary studies with a focus in studio art.

The program, which began in the summer of 1993 with one painting class in Stafford, Va., has grown to include courses in 13 counties and school systems as well as two Web courses. Classes have been offered in painting, printmaking, drawing, sculpture, ceramics, glass, textiles, computers in the arts, mixed media, photography and art

education. Approximately 200 students enroll each semester.

Most of the participants in the off-campus art classes are public school teachers. An exciting aspect of the program is that these teachers begin to benefit immediately as they transfer renewed skills, knowledge and creative excitement to their own classrooms.

For more information, contact Michael Drought, phone (804) 225-3561, fax (804) 828-6469 or e-mail [mhdrough@vcu.edu](mailto:mhdrough@vcu.edu); Dr. Charles Bleick, chair, Department of Art Education, School of the Arts, phone (804) 828-1966, fax (804) 828-6469 or e-mail [cfbleick@vcu.edu](mailto:cfbleick@vcu.edu); or Sue Munro, Office of Community Programs, phone (804) 828-8819 or e-mail [sfmunro@vcu.edu](mailto:sfmunro@vcu.edu).

## Interdisciplinary Track in Environmental Studies

(Pending approval of a stand-alone M.S. degree program by the State Council of Higher Education for Virginia)

### Gregory C. Garman

Director, Center for Environmental Studies  
Ph.D. University of Maine  
Ichthyology.

The Center for Environmental Studies was created in 1993 as a focus for the growing number of multidisciplinary environmental initiatives at VCU. The center's objectives complement the broader university mission of teaching, research and community outreach, and provide the commonwealth with a unique academic resource. The interdisciplinary graduate program in environmental studies is administered by the School of Graduate Studies, the Center for Environmental Studies and the College of Humanities and Sciences.

## Program description

The Center for Environmental Studies offers students the opportunity for advanced, graduate-level training in environmental studies for full-time and part-time students. The program offers studies in environmental policy, environmental science, environmental health and environmental technology. The unique curriculum is designed to provide graduates with the ability to communicate effectively across traditional discipline boundaries, while fully developing specific areas of expertise. Graduates of the center's academic programs hold positions as environmental pro-

fessionals in government and in the non-profit and private sectors.

As part of the requirements of the Master of Interdisciplinary Studies Program, students must successfully complete the following requirements:

Three credits of ENVS 590 or ENVS 591  
ENVS 601 Survey in Environmental Studies  
ENVS 603 Environmental Research Methods  
One statistics course (500-level or above)  
Three to six credits of ENVS 692, ENVS 697 or ENVS 698  
to satisfy thesis/project requirements of the M.I.S.

In addition to Environmental Studies courses administered by the center, cooperating departments and programs at VCU also offer specialized graduate courses that may be applied to the graduate program in Environmental Studies. Cooperating programs include: biology, public administration, public health in the Department of Preventive Medicine and Community Health, urban and regional planning, pharmacology and toxicology and economics.

## Admission requirements

Applicants should have successfully completed undergraduate training and hold a baccalaureate degree. Admission to the program is drawn generally from applicants with an undergraduate GPA above 3.0 (on a 4.0 scale or equivalent) and satisfactory scores on a current (less than five years old) standardized graduate admissions test deemed appropriate by the Center for Environmental Studies. Applicants holding undergraduate degrees from recognized foreign institutions should display an acceptable level of English proficiency by achieving a score of 600 or above on the TOEFL examination.

## To apply

Applicants for admission to the program must complete forms provided by the School of Graduate Studies and indicate Master of Interdisciplinary Studies – Environmental Studies as the curriculum. A limited number of merit-based university graduate fellowships and assistantships are available to applicants on a competitive basis. Inquiries regarding funding should be addressed to the Center for Environmental Studies, Virginia Commonwealth University, P.O. Box 843050, Richmond, VA 23284-3050. Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at

<http://www.vcu.edu/graduate>. For more information about the Center for Environmental Studies, browse the center's Web site: <http://www.vcu.edu/cesweb>.

## Graduate courses in environmental studies (ENVS)

### ENVS 521/URSP 521/GEOG 521 Introduction to Geographic Information Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

### ENVS 550 Ecological Risk Assessment

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in ecology, statistics, geology, chemistry or permission of instructor. Ecological risk assessment provides an introduction to the concepts and practice of risk assessment as applied to ecological applications, focusing on the United States. The course will examine the history of risk assessment in U.S. environmental regulation and policy, development and practice of ecological risk assessment and application to regional issues. All students will conduct a risk assessment for a regional case study.

### ENVS 590 Research Seminar in Environmental Studies

An interdisciplinary examination of problems and issues related to environmental studies.

### ENVS 591 Topics in Environmental Studies

Variable credit, 1-3 credits per semester; may be repeated with different topics for a maximum of six credits. An in-depth study of a selected environmental topic. Prerequisites vary by topic; see the Schedule of Classes for specific prerequisites.

### ENVS 601 Survey in Environmental Studies

Provides a foundational understanding of issues central to environmental studies. Lectures will address the theoretical and scientific basis for a variety of pertinent issues, including: and water quality and quantity, pollution prevention, environmental law and policy, population growth, global climate change, conservation, and human and ecological health.

### ENVS 602 Environmental Technology

This course gives students the opportunity to develop skills not available in the traditional academic setting. Students take two to four workshops offered by the Center for Environmental Studies in its Environmental Technology Training Workshop series. Students will complete an additional project related to each workshop or series of workshops for evaluation purposes.

### ENVS 603 Environmental Research Methods

Provides students with an understanding of statistical and research methods as they apply to environmental research. Students will complete projects on available data sets. This course emphasizes the application of current data analysis methodologies, including the graphical

display of summary data, statistical modeling and prediction, and Geographic Information Systems (GIS).

### ENVS 628/PADM 628 Environmental Policy and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. This course explores the relationship between environmental policy and its implementation within a democratic political system. It includes an investigation of basic concepts that underlie environmental policy and the difficulties encountered when attempting to apply them in a real-world setting. It also surveys a variety of tools and methodologies that may be useful in attempting to develop and implement environmental policy.

### ENVS 650 Pesticides, Health and the Environment

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in toxicology, chemistry or permission of instructor. This course is a balanced overview of the benefits and adverse effects of pesticides in the environment and as related to human health. The class provides an interdisciplinary study of pesticide use, fate, exposure, transport and effects.

### ENVS 654/URSP 654/BIOL 654 Environmental Remote Sensing

Semester course; 3 lecture hours. 3 credits. Prerequisites: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

### ENVS 655 Hydrogeology

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENVS 355 or equivalent, or permission of instructor. Focuses on the fundamental concepts of groundwater flow and contaminant transport with an emphasis toward environmental issues such as waste disposal, surface water hydrology, groundwater hydrology and wells, environmental impacts and hydrogeological systems. Allows students to understand and interpret the basic environmental hydrogeologic characteristics of a site and to use that knowledge to provide an informed opinion on protection and remediation.

### ENVS 660 Virginia Environmental Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENVS/PADM 628 or permission of instructor. An overview of relevant Virginia environmental law and regulations in the fields of environmental planning, management and policy. Provides students with working knowledge of documentation necessary for compliance with state environmental programs.

### ENVS 670 Pollution Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in: ecology, toxicology or animal physiology; or permission of instructor. Courses provides an in-depth presentation of the physiology of animals in polluted habitats and examines the responses of aquatic organisms exposed to pollutants and other environmental stressors, including: thermal and salinity changes, anoxia and hypoxia, hypercapnia, chemical contamination, sedimentation and microbial contamination. The course takes a comparative

approach and focuses on non-human systems. Both laboratory and field experiences are provided.

### ENVS 691 Topics in Environmental Studies

Provides an in-depth study of a selected environmental topic.

### ENVS 692 Independent Study

Variable credit, 1-3 credits per semester; may be repeated with different topics for a maximum of six credits. An in-depth study of a selected environmental topic.

### ENVS 693 Internship in Environmental Studies

Each credit hour represents 60 clock hours of work. Provides students with a workplace experience in a public or private agency related to Environmental Studies.

### ENVS 697 Research

Planning, preparation, completion, and presentation of research in environmental studies.

### ENVS 698 Thesis

Planning, preparation, completion, and presentation of research in environmental studies.

## Core environmental studies courses

The following course groupings represent examples of courses students may take in fulfillment of program requirements. The three groupings are representative of course work and serve only as suggestions. Students will determine their own course of study under the supervision of the graduate program coordinator. Please consult the Schedule of Classes for current course offerings and this bulletin for current curriculum guidelines and course prerequisites.

### Environmental planning

URSP 621/GEOG 621 Introduction to Geographic Information Systems  
URSP 626 GIS Applications for Planners  
URSP 628 Land Use Planning  
URSP 635 Legal and Legislative Foundations of Planning  
URSP 650 Environmental Planning  
URSP 652 Environmental Analysis  
MATH 639 Studies in Operations Research  
MATH 647 Multiattribute Utility Theory  
RECR 601 Foundations of Recreation  
PADM 601 Principles of Public Administration

### Environmental science

BIOL 502 Microbial Biotechnology  
BIOL 503 Fish Biology  
BIOL 510 Conservation Biology  
BIOL 514 Stream Ecology  
BIOL 518 Plant Ecology  
BIOL 522 Evolution and Speciation  
BIOL 591 Special Topics in Biology  
BIOL 606 Quantitative Ecology  
BIOL 626 Physiological Ecology  
BIOL 691 Special Topics in Biology  
CHEM 504 Advanced Organic Chemistry I  
CHEM 507 Introduction to Natural Products  
CHEM 532 Advanced Analytical Chemistry  
CHEM 591 Special Topics in Chemistry

CHEM 605 Physical Organic Chemistry  
CHEM 620, 621 Advanced Inorganic Chemistry I, II  
CHEM 691 Special Topics in Chemistry  
PHYS 507 Materials Characterization  
PHYS 591 Topics in Physics

#### **Environmental health**

PMCH 511 Basic Industrial Hygiene I  
PMCH 512 Basic Industrial Hygiene II  
PMCH 571/NURS 571 Principles of Epidemiology  
PMCH 600 Introduction to Public Health  
PMCH 617 International Health  
EGRB 511 Fundamentals of Biomechanics  
EGRB 613 Biomaterials  
EGRB 635 Modeling for Biomedical Engineers  
PHTX 535 Introduction to Toxicology

### **Post-baccalaureate Certificate in Environmental Studies**

Environmental crises and discussion of environmental issues are central features of modern industrial societies. Continuing technological advancement and economic growth demand increased public understanding of environmental constraints and the effects of human activity on the environment. When environmental questions are explored in depth, scientific knowledge, policy considerations and ethical questions are necessarily joined. The curriculum in environmental studies is structured to provide a multidisciplinary introduction to biophysical and social factors which affect the quality of life on earth.

The environmental studies certificate is for students who already hold a bachelor's degree in another field and wish to pursue studies in the environmental field. The certificate can help prepare students for work in such fields as industrial pollution control, municipal water treatment, environmental planning and analysis, biological monitoring, and science writing and reporting.

The Post-baccalaureate Certificate in Environmental Studies requires 36 credits, which includes four environmental courses and two statistics courses. Electives to complete the certificate may be selected from courses in environmental studies and from courses in related departments. Consult the environmental studies program coordinator or adviser for course approvals. At least one course must be taken from the natural sciences and one from the social sciences. Of the 36 credits, 24 credits must be at the 300 level or above. A maximum of 11 of the environmental studies-related credits and all six of the statistics credits may be transferred from course work completed before or after receiving the bachelor's degree. At least 18 approved credits must be taken at VCU.

Post-baccalaureate certificate students must apply for admission using an undergraduate admission application. Normally, a GPA of 2.7 or better is required for admission. Please contact the Center for Environmental Studies for the most current curriculum guidelines.

<b>Required courses for certificate</b>	credits
URSP/ENVS 331 Environmental Systems or URSP/ENVS/GEOG 332 Environmental Management	3
ENVS/POLI 311 Politics of the Environment	3
ECON 325 Environmental Economics	3
ENVS 490 Research Seminar in Environmental Studies	3
STAT 210 Basic Practice of Statistics or MGMT 301 Business Statistics	3
Three additional credits in statistics above STAT 210 (students may not receive credit for both STAT 210 and MGMT 301)	3
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#### **Additional recommended courses**

BIOL 151-152, 151L-152L Introduction to Biological  
Sciences and Laboratory  
CHEM 101-102, CHEM/FRSC 101L-102L General Chemistry  
and Laboratory

### **Center for Public Policy**

#### **Robert D. Holsworth**

Acting Director, Ph.D. Program, Public Policy  
and Administration Program  
Ph.D. University of North Carolina  
U.S. politics, political theory, public policy.

The Center for Public Policy offers a doctoral degree in public policy and administration. The center was established to serve as the focus of the university's interdisciplinary efforts in teaching, research and service related to public policy. See the Center for Public Policy chapter of this bulletin for details about the Ph.D. program.

### **Master of Public Health Program in Preventive Medicine and Community Health**

#### **Tilahun Adera**

Chair, Department of Preventive Medicine and  
Community Health  
Ph.D. Oregon State University  
M.P.H. University of Washington  
M.A. Oregon State University  
Occupational epidemiology.

The graduate program in public health is offered through the School of Medicine's

Department of Preventive Medicine and Community Health and leads to a master of public health degree. The program is closely linked with local, state and national public health agencies, organizations and professionals in order to enhance the student's appreciation and understanding of applying public principles to practice. The M.P.H. Program provides the knowledge and skills necessary for a broad range of positions in academia, private industry, and local, state, national and international health organizations.

Graduates of the M.P.H. Program are expected to comprehend the complex matrix of psychosocial, cultural, economic, political and biological factors that influence sick care systems, prevention activities and other current health issues; to be able to identify, analyze, diagnose, and interpret public and community health issues to design, implement and evaluate community health programs; and to be able to apply specific skills and knowledge to the surveillance of disease and injury.

See the Graduate Studies at VCU chapter of this bulletin for School of Graduate Studies rules on admissions and general academic policies. For more information on the Master of Public Health program, see the program description in the School of Medicine Graduate Programs chapter of this bulletin or visit <http://www.medschool.vcu.edu/dept/prevmed.html>.

### **Coordinated M.D./M.P.H. Degree Program in Preventive Medicine and Community Health**

The School of Medicine's Department of Preventive Medicine and Community Health also offers a coordinated M.D./M.P.H. Degree Program. The main objective of the M.D./M.P.H. program is to provide high quality and in-depth training for motivated medical students wishing to pursue a career in public health or preventive medicine. Each applicant must submit an application to and be formally admitted into the School of Medicine prior to matriculation into the M.P.H. program.

### **Commonwealth Graduate Engineering Program**

#### **L. Thomas Overby**

Assistant Dean for Graduate Affairs  
School of Engineering  
Ph.D.



The Commonwealth Graduate Engineering Program is a collaborative effort of the University of Virginia, Virginia Commonwealth University, Virginia Polytechnic Institute and State University, Old Dominion University, and George Mason University. Mary Washington College participates as a funded receive site.

See the School of Engineering Graduate Programs section of this bulletin for information on VCU's graduate programs in engineering.

### Administration

The VCU Commonwealth Graduate Engineering Program (CGEP) director works closely with the other CGEP directors, the VCU Dean of School of Engineering, and local businesses and industries.

### Program description

Students who have baccalaureate degrees in engineering or strong backgrounds in the sciences may work toward a master's degree in engineering on the Academic Campus of VCU. Graduate engineering courses are available from the CGEP member universities via interactive television, the Web and two-way audio/video teleconferencing. In addition to the required engineering courses, elective courses are available in applied mathematics, mathematical statistics, chemistry, operations research, and physics in classes at VCU. The following academic programs are available through CGEP:

Chemical Engineering  
Civil and Environmental Engineering  
Computer Science  
Electrical and Computer Engineering  
Engineering Management  
Industrial and Systems Engineering  
Manufacturing and Design Engineering  
Materials Sciences and Engineering  
Mechanical and Aerospace Engineering  
Modeling and Simulation

### Degree-seeking students

Students enrolling in the program should apply for admission in a given academic area of study and may select courses from any of the participating institutions, consistent with selected degree requirements.

### Nondegree-seeking students

Qualified individuals may enroll in a particular course without pursuing a formal

degree program of study. Admission will be based on the individual's academic preparation and the availability of space.

### Admission requirements

Students should apply for admission to the CGEP University offering the desired degree program. Applicants should have a "B" average, but a successful professional experience may strengthen admission credentials. Three recommendations from persons who are qualified to give information concerning the applicants' probable success in the program and the completion of the Graduate Record Examination (GRE) also are required.

### Certificate Program in Aging Studies

The Certificate in Aging Studies Program was designed primarily to meet the needs of persons who are working already with the elderly, but who have no academic training in gerontology. The certificate program provides students with a comprehensive overview of gerontology and stimulates the application of gerontological research to problems in applied areas. The certificate program also is a minor option for graduate students in other disciplines.

The Certificate in Aging Studies Program is designed to meet the needs of those individuals who desire graduate training in gerontology, but who do not desire the full completion of the master's program. This program is complementary to the Master of Science Program. Certificate students who wish to enter the Master of Science Program must make formal application and abide by the admission requirements outlined in this bulletin.

For more information on the Certificate in Aging Studies, see the program description in the School of Allied Health Professions Graduate Programs chapter of this bulletin.

### Certificate in Aging Studies with Emphasis in Long-term Care Administration

The Certificate in Aging Studies with Emphasis in Long-term Care Administration is presented in cooperation with the Department of Health Administration. This 22-credit certificate prepares students for the nursing home administration licensing exam.

For more information on this certificate program, see the program description in the School of Allied Health Professions Graduate Programs chapter of this bulletin.

### M.S.W. and Certificate in Aging Studies

The School of Social Work, in cooperation with the Department of Gerontology, provides students with a unique opportunity in social work and gerontology. Students in the Master of Social Work Program interested in working with the elderly or in gerontological programs may earn a Certificate in Aging Studies while completing master of social work degree requirements.

Interested students must meet the admission requirements of the Master of Social Work Program of the School of Social Work and of the Certificate in Aging Studies of the Department of Gerontology. Admission into one program does not guarantee admission into the other. In order to meet the requirements of the Master of Social Work degree and the Certificate in Aging Studies, students complete a total of 65 graduate credits. All foundation and concentration courses of the Master of Social Work Program are completed, and core courses (nine credits) of the Certificate in Aging Studies program are completed. Other requirements are met by (1) completion of the M.S.W. research credits (six credits) in which students undertake a project focused on aging, (2) completion of second-year field instruction practicum requirements (six credits) in a social work setting related to aging and (3) completion of an independent study course in gerontology which integrates research and practicum courses.

Additional information may be obtained from the Department of Gerontology, 301 College St., Richmond, VA 23298-0228, Attention: M.S.W.-Gerontology Certificate Adviser.

### M.S.W. and Certificate in Nonprofit Management

Through a cooperative arrangement with the VCU Department of Public Administration, M.S.W. students pursuing the Social Work Administration, Planning and Public Policy (SWAPPP) concentration may simultaneously earn the graduate certificate offered by the Public Administration Program of the Department of Political

Science and Public Administration. Social work SWAPPP Concentration students are required to complete three nonprofit courses: PADM 656 Fund Development for the Nonprofit Sector; PADM 659 Financial Management for Nonprofit Organizations; and PADM 661 Nonprofit Law, Governance and Ethics in the Department of Political Science and Public Administration.

Two social work SWAPPP courses are substituted for 6-credit hours of the certificate's 15-credit hour requirement. One of these courses is SLWK 712 Social Work Administration, Planning and Policy Practice I. The second course can be SLWK 711 Strategies for SWAPPP or SLWK 713 Social Work Administration, Planning and Policy Practice II.

M.S.W. Clinical Concentration students must complete 15 course credits in nonprofit management. Six of the PADM nonprofit credits will satisfy the M.S.W. elective requirement for either concentration.

### **Application process**

To earn the Certificate in Nonprofit Management simultaneously with the M.S.W., M.S.W. students must apply to the School of Graduate Studies for the Nonprofit Management certificate program. No supporting information or fees are required for students who are already enrolled in good standing in the social work master's degree program. Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: Certificate in Nonprofit Management Advisor. Detailed information about the Certificate in Nonprofit Management can be obtained from Dr. Janet Hutchinson, Associate Professor and Director of the Master of Public Administration Program, (804) 828-8041 or e-mail: [jhutch@vcu.edu](mailto:jhutch@vcu.edu).

### **Joint Certificate in Aging Studies with the Department of Occupational Therapy**

This Aging Studies certificate is integrated into the Post-professional Master's program in Occupational Therapy. Students complete 15 credits in Gerontology and three credits in Occupational Therapy.

For more information on this certificate program, see the program description in

the School of Allied Health Professions Graduate Programs chapter of this bulletin.

### **Joint Certificate in Aging Studies with the Pharm.D. Program**

The School of Pharmacy, in cooperation with the Department of Gerontology, offers a 17-credit Certificate in Aging Studies to pharmacy students who have completed two years of the pharmacy curriculum. Students accepted into the two programs take all course work required for both programs. Students progress through the Pharm.D. courses in sequence with their classmates.

For more information on this certificate program, see the program description in the School of Allied Health Professions Graduate Programs chapter of this bulletin.

### **Joint Certificate in Aging Studies with the Department of Rehabilitation Counseling**

Offered jointly by the Departments of Gerontology and Rehabilitation Counseling, the Certificate in Aging Studies can be completed concurrently with a Rehabilitation Counseling degree. Graduates with both credentials may specialize in a rapidly emerging field — aging with a disability. With careful faculty advisement, Rehabilitation Counseling students can complete this 17-credit certificate by substituting specific required courses.

For more information on this certificate program, see the program description in the School of Allied Health Professions Graduate Programs chapter of this bulletin.

### **Certificate in Applied Social Research**

The Department of Sociology provides limited, specialized training in the methods and techniques of applied social research. This certificate meets the needs of students who wish to acquire these skills without pursuing a graduate degree or who are enrolled in a graduate program and wish to fulfill specific job or career needs.

For more information on the Certificate in Applied Social Research, see the program description in the College of Humanities and

Sciences Graduate Programs chapter of this bulletin.

### **Graduate Programs in Statistical Areas and Operations Research**

See degree programs or tracks and cross-listed courses in statistics in the following areas:

Biostatistics (M.S., Ph.D.) – School of Medicine  
Business (M.B.A., M.S. and Ph.D. concentrations in decision sciences) – School of Business  
Mathematical Sciences (M.S. in Statistics/Mathematical Sciences and M.S. in Operations Research/Mathematical Sciences) – College of Humanities and Sciences  
Psychology (Ph.D.) – College of Humanities and Sciences  
Sociology (M.S. and Certificate in Applied Social Research) – College of Humanities and Sciences

### **Combined M.D./Ph.D. Degree Program**

Many future physicians, especially those interested in academic and research careers, should begin in-depth research training while still in school or residency training. They benefit from the training most effectively by completing the requirements for the doctor of philosophy degree concurrently with the study of medicine. The MCV Campus medical curriculum, with free time for elective courses and research, provides an excellent opportunity for interested students to enter a combined M.D./Ph.D. Program.

For more information, see the program description in the School of Medicine Graduate Programs chapter of this bulletin.

### **Combined Pharm.D./Ph.D. Degree Program**

The School of Pharmacy offers a combined Pharm.D./Ph.D. program in pharmaceutical sciences. Interested pharmacists should contact the program director in the School of Pharmacy for details. Students must apply to and be accepted by each program separately.

### **Pharm.D./M.B.A. Program**

The VCU School of Pharmacy and School of Business offer a dual degree program that allows students in

the Pharm.D. program to apply and simultaneously enroll in the M.B.A. degree. The Pharm.D./M.B.A. program is designed to prepare pharmacists for careers that require expertise in both pharmacy and business theories and principles. The program is designed to take advantage of efficiencies in both the Pharm.D. and M.B.A. programs. With careful planning, students enrolled in the dual degree program may complete requirements of both degree programs in five years.

For more information, see the program descriptions in the School of Pharmacy and School of Business chapters in this Bulletin.

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### Interdisciplinary Ph.D. programs

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The schools of Medicine and Allied Health Professions offer doctor of philosophy programs in anatomy/physical therapy and physiology/physical therapy. These research degrees are planned primarily as physical therapy faculty development programs; other needs may be met for individual students. Interested physical therapists should contact the Department of Anatomy or the Department of Physiology.

Other interdisciplinary doctor of philosophy programs include the Ph.D. in Education, the Ph.D. in Health Related Sciences, the Ph.D. in Social Work and the Ph.D. in Public Policy. These programs are outlined in the School of Allied Health Professions, the School of Education, the Center for Public Policy and the School of Social Work sections of this bulletin. New Ph.D. programs in Integrative Life Sciences and Epidemiology have been approved by VCU and are pending final SCHEV approval.

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### Interdisciplinary Studies in Developmental Disabilities

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The Partnership for People with Disabilities was formerly known as the Virginia Institute for Developmental Disabilities (VIDD). The Partnership promotes and facilitates interdisciplinary training of human service professionals at the graduate level who are preparing to work with children or adults with developmental disabilities, and their families.

Through careful selection of course work and practica, the Partnership's faculty works closely with graduate students and their advisers to design a course sequence that builds competency in the area of developmental disabilities. The course work is ref-

erenced IDDS – Interdisciplinary Developmental Disabilities Studies.

The Partnership has been able to offer limited stipends to qualified graduate students who specialize in early intervention/early childhood, or leadership development in childhood neurodevelopmental disabilities. These awards are limited and address requirements specified by the funding source.

For more information, contact the Partnership for People with Disabilities at (804) 828-3876, Virginia Commonwealth University, P.O. Box 843020, 700 E. Franklin St., 10th Floor, Richmond, VA 23284-3020.

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### Dual Degree Programs in Criminal Justice and Divinity

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The dual degree program in Criminal Justice and Divinity is offered cooperatively by VCU, the School of Theology of Virginia Union University (STVU) and the Union Theological Seminary and Presbyterian School of Christian Education (Union-PSCE).

The Master of Divinity/Master of Arts in Criminal Justice offer academic and practical training to equip professionals for a highly specialized, demanding ministry within the criminal justice system.

Students must be accepted for admission to VCU's graduate program in criminal justice and also to the Master of Divinity program at either Union-PSCE or to the School of Theology of Virginia Union University. Each school has its own separate requirements and standards for admission. Tuition and other expenses also vary among the schools; payment is made to the school where the student is taking classes. All three schools offer a variety of types of financial assistance to students.

In place of electives offered at their own institutions or through the Richmond Theological Consortium, Union-PSCE and STVU Master of Divinity students will take criminal justice courses at VCU. Academic advising for students will be cooperative, with thesis supervision provided by a VCU faculty member. Faculty teams from the cooperating schools will be used for an integrative seminar in the final semester. A steering committee with representatives from all cooperating schools will monitor the quality of the program and recommend changes. A model program of study is included in this bulletin.

For more information about admission requirements, cost and financial aid, contact:

Dr. John Carroll  
Dean of the Faculty  
Union Theological Seminary and Presbyterian School of  
Christian Education  
3401 Brook Road  
Richmond, VA 23227  
(804) 278-4230 or 1-800-229-2990

Dr. Jay Albanese  
Department of Criminal Justice  
Virginia Commonwealth University  
816 W. Franklin St.  
Richmond, VA 23284-2017  
(804) 828-1050  
jsalbane@vcu.edu

Dr. John Kinney  
Dean of the School of Theology  
Virginia Union University  
1500 N. Lombardy St.  
Richmond, VA 23220  
(804) 257-5715

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### Dual Degree Program in Health Administration and Law

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Advanced study in Health Administration and Law is available through a dual degree program cosponsored by the Department of Health Administration and the T.C. Williams School of Law at the University of Richmond. The program leads to the awarding of the Master of Health Administration and Juris Doctor degrees. Participants are provided the necessary expertise either to represent clients within the health care industry or to function as legal policy makers or administrators who fully appreciate the legal environment of the health care field. Applicants for this program are required to meet the admission requirements of each program.

For more information regarding this dual degree program, see the program description in the School of Allied Health Professions chapter of this bulletin.

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### Dual Degree Program in Medicine and Health Administration

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Advanced study in the Department of Health Administration and the School of Medicine is available through a dual degree program co-sponsored by the department and the VCU School of Medicine. The program leads to the awarding of the Doctor of Medicine and Master of Health Administration degrees. The objective of

the M.D./M.H.A. program is to provide highly motivated medical students with the expertise for management and leadership competency in complex health care organizations. The program may be completed in five years. Applicants for this program are required to meet the admission requirements of each program.

For more information regarding this dual degree program, see the program description in the School of Allied Health Professions chapter of this bulletin.

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### **Dual Degree Program in Business and Information Systems**

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The Master of Science – Information Systems program at VCU is designed to prepare students for specialized roles in information systems within a business environment. The program provides a graduate level, technically oriented curriculum that focuses on the design and development of information systems.

The Master of Business Administration (M.B.A.) program at VCU is designed to prepare individuals for the responsibilities of management. The program provides the student with an understanding of the environmental and economic factors that affect decision-making in organizations. The students are prepared to react as future events unfold that affects his/her organization. The concentration in Information Systems offers the student a baseline level of training in understanding how information systems fit into an organization.

The dual degree program in Business and Information Systems combines the best of both programs to provide students with an in-depth understanding of the business environment (based on the M.B.A. curriculum), a base-level understanding of the major areas affecting IT (based on the IS core courses), and an in-depth understanding of how IT affects and can advance business in today's high technology environment. Based on the track or specialization chosen in the IT program, the student has the opportunity to specialize in a chosen area of expertise in today's technology. The dual degree graduate will be well grounded in various business and IT disciplines and have affirm understanding of their impact on each other. A program of this breadth and depth will offer the student an excellent foundation for doctoral level studies of for functioning as a well-trained executive professional.

Refer to the School of Business section of this bulletin for complete information about the dual degree program in Business and Information Systems.

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### **Combined M.Div./M.S. in Patient Counseling**

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The Program in Patient Counseling, in cooperation with the School of Theology at Virginia Union University and the Baptist Theological Seminary in Richmond, offers a joint Master of Divinity/Master of Science in Patient Counseling Degree Program. Dual degree candidates may apply six credits from their seminary studies to the VCU degree. Students must apply to and be accepted by each program separately.

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### **Graduate course work in the medical humanities**

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Graduate students in the health professions or in health-related fields may be interested in taking ORPT 510 Medical Humanities. This course is sponsored through the School of Dentistry and is open to all graduate students in the health professions and health-related fields. The two-credit course is offered each fall one day per week from 6 to 8 p.m. Questions may be directed to Louis M. Abbey, D.M.D. at (804) 828-1778 or via e-mail: [labbey@vcu.edu](mailto:labbey@vcu.edu). The Medical Humanities course syllabus is available online: <http://www.vcu.edu/dentistry/opath>.

The Medical Humanities course explores and interprets literature (short stories, poetry and essays). The class discusses myth, moral and ethical issues in relation to the literature assigned. Students are encouraged to keep and share a reading journal in which they reflect on their personal stories and those of the characters about whom they read. Class discussion stimulates an understanding between the health professional's daily life and the lives and situations of the characters in the readings. Medical humanities establishes useful connections between the life of a health professional and reflective intellectual experience. Students taking the course for credit will be expected to write a creative work and/or a paper.

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### **Graduate Program in Molecular Biology and Genetics**

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The graduate program in molecular biology and genetics is an interdisciplinary graduate program involving the departments of Biochemistry and Molecular Biophysics, Human Genetics, Microbiology and Immunology, and Pharmacology and Toxicology. Students obtain a sound background in molecular biology and genetics through a series of required core courses covering biochemistry, cellular and molecular biology, molecular genetics and current methodology. Electives beyond the core may be chosen from any of the participating departments, according to the students' interests. The curriculum also includes laboratory rotations and research seminars. Once a dissertation adviser is chosen from an interdepartmental roster, the student completes his or her degree in the adviser's home department. The goal of the M.B.G. program is to provide an interdisciplinary approach to graduate training in molecular biology, drawing on the expertise of the participating departments. Written and oral comprehensive exams and the preparation of a research proposal are required to advance to candidacy. Completion of an original research dissertation is necessary for successfully completing the doctor of philosophy degree. A course of study leading to a master of science degree also is available, with particular emphasis on course work and research skills in those aspects of molecular biology that relate to biotechnology.

For more information, contact Dr. Gail E. Christie, professor, Department of Microbiology and Immunology, School of Medicine, phone (804) 828-9093 or e-mail [christie@mail2.vcu.edu](mailto:christie@mail2.vcu.edu).

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### **Graduate Program in Neuroscience**

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The Graduate Program in Neuroscience (GPN) is an interdisciplinary doctoral program involving the departments of Anatomy and Neurobiology, Biochemistry and Molecular Biophysics, Pharmacology and Toxicology, and Physiology on the MCV Campus of VCU. To obtain a sound background in neuroscience, GPN students complete required core courses covering neuroanatomy, neurophysiology, biochemistry and molecular biology, and a series of electives. The curriculum also includes lab rotation and research seminars. Once a dis-

sertation adviser is selected from an inter-departmental roster, the student completes his or her degree in the adviser's home department. The goal of the GPN is to provide neuroscience students with a core knowledge of the basic structure and function of the CNS, while allowing flexibility in the choice of their advisers, electives and areas of research specialization. Written and oral comprehensive exams and the preparation of a research proposal are required to advance to candidacy. Completion of an original research dissertation is then necessary for successfully completing the doctor of philosophy degree.

For more information, contact Dr. Leslie S. Satin, professor, Department of Pharmacology and Toxicology, School of Medicine, phone (804) 828-7823 or e-mail [lsatin@hsc.vcu.edu](mailto:lsatin@hsc.vcu.edu).

### Graduate education from a distance

The School of Allied Health Professions recognizes the changing classroom of the future and the exciting possibilities available through the use of new and developing technology. Five graduate-level programs currently offer degrees or course work via distance-learning educational formats.

The Professional M.S.H.A. Program-Online is an innovative, fully accredited course of study leading to the master of science in health administration degree. The program combines Web and other distance-learning technologies with short on-campus sessions. It is designed so that individuals working full time, residing anywhere in the United States can complete the program in two years.

The Post-professional Master of Science Program in Occupational Therapy is available for registered occupational therapists.

This program adopted a distance-education format in fall 1999 and combines Internet-based course work with brief, intensive, on-site instructional periods. The program is designed to be completed in approximately two years of full-time study.

The Department of Rehabilitation Counseling began offering its master of science degree program in a distance-learning format in July 1999. Ten required courses and two electives are available via the Internet. Two clinical counseling courses (offered in a compressed format at several locations) and an approved internship at a community facility local to the student combine with these distance-learning courses to complete the degree requirements.

The doctoral program in health related sciences is an interdisciplinary, Internet-based course of doctoral study. The program is designed for working professionals seeking career advancement in teaching and research positions in the health industry. The course work is divided into two semesters per year, each of which is six months long and composed of on-campus (seven to 12 days) and off-campus (five and one-half months) sessions. On-campus sessions are taught in several state-of-the-art computer and distance-learning classrooms. Areas of specialization include the following:

- clinical laboratory sciences
- gerontology
- health administration
- nurse anesthesia
- occupational therapy
- physical therapy
- radiation sciences
- rehabilitation leadership

In addition to these degree programs, the Department of Gerontology offers selected

course work utilizing televised and video-teleconferencing formats. For more information on graduate education from a distance, see program descriptions in the School of Allied Health Professions Graduate Programs chapter in this bulletin.

### Virginia Center on Aging

The Virginia Center on Aging, established at VCU by the Virginia General Assembly in 1978, is a statewide resource for aging-related research, education, service, training and technical assistance. It serves as a focal point for the collection, assessment and maintenance of data on elders in the commonwealth; designs and tests innovative demonstration projects in education and service delivery; and assists public and private organizations in meeting the needs of older citizens.

The Virginia Center on Aging and the Department of Gerontology maintain the Information Resources Center, a broad collection of print and audiovisual materials on aging that is available on loan. Short reports and training manuals may be obtained at cost. The Virginia Center on Aging also administers the Alzheimer's and Related Diseases Research Award Fund which provides seed grants of \$25,000 each to researchers in Virginia in order to investigate biomedical, psychosocial, clinical, public policy and other aspects of dementing illness.

The Virginia Center on Aging regularly partners with other units of VCU in developing, conducting, and evaluating research and training projects related to aging, disabilities, lifelong learning and health problems.



# Center for Public Policy Graduate Program

The purpose of the Ph.D. in Public Policy and Administration Program is to prepare students for scholarly and leadership roles in government, universities, research organizations and other settings where knowledge and research skills in public policy and administration are needed. The doctor of philosophy program is committed to accomplishing this mission by creating an intellectually vibrant atmosphere for scholarship involving an active faculty from a broad spectrum of academic disciplines and substantial interaction with government agencies and community groups.

The Ph.D. in Public Policy and Administration is a degree program of the university's Center for Public Policy. The center was established to serve as the focus of the university's interdisciplinary efforts in teaching, research and service related to public policy. The center, as well as the doctoral program, is designed to involve faculty and academic units from across the university.

## Faculty

Faculty for the doctor of philosophy program are drawn from graduate faculty across the university. A list of participating faculty and academic units is available from the program office.

## Requirements for admission

Admission is open to qualified persons without regard to age, physical disability, national origin, race, religion or gender. Admission is competitive since it is limited by the number of places available. The admission process is intended to assure a reasonable fit between the student's professional and research interests and faculty expertise. Consequently, otherwise qualified applicants may be denied admission.

Applicants to the program must hold a master's degree or a recognized post-baccalaureate degree in one of the professions such as law or medicine from an accredited institution of higher education. A standardized test score, fewer than five years old, is

required. Accepted examinations include the Graduate Record Examination (GRE), the Graduate Management Admissions Test (GMAT) and the Law School Admissions Test (LSAT). Professional experience is not required, but is considered desirable.

In order to apply for admission to the Ph.D. in Public Policy and Administration Program, prospective students must submit:

- a VCU Application for Graduate Study,
- transcripts from all previous colleges or universities,
- scores from a standardized examination (GRE, GMAT, or LSAT),
- three letters of reference,
- a personal statement describing reasons for applying to the program, and
- a current professional resume.

International applicants must submit the International Application and TOEFL scores.

All students admitted to the program must have completed prior to admission, or are required to complete during their first year, the following graduate-level courses (or their equivalent):

- research methods (equivalent of PADM 623),
- statistics (equivalent of PADM 624), and
- public policy, economics or administration/management.

The primary admissions deadline is March 15 for enrollment to begin the following fall semester. A small number of special admissions may be made in the fall (Oct. 15 application deadline) for entry the following spring semester. Applicants who wish to be considered for the Oct. 15 deadline must include a letter requesting and justifying early admission. If the request for early consideration is not accepted, the application will be held over to the March 15 application date.

While university rules allow up to six credit hours of course work to be taken as a special student prior to formal admission, taking such courses in no way guarantees admission to the program. Graduate courses designated "doctoral students only" may not be taken prior to formal admission, although they may be taken by fully admitted doctoral students in other programs.

Application packets may be obtained from the program office or the School of

919 W. Franklin St. • P.O. Box 843061  
Richmond, VA 23284-3061  
(804) 828-6837 • Fax (804) 828-6838  
<http://www.vcu.edu/cppweb>

### Robert D. Holsworth

Director, Center for Public Policy  
B.A., Ph.D.

### Melvin I. Urofsky

Director, Ph.D. in Public Policy and  
Administration  
B.A., M.A., J.D., Ph.D.

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Graduate Studies. International applicant materials are available from the International Admissions Office.

## Requirements for the Ph.D.

The doctor of philosophy program is structured around a core curriculum and several areas of concentration. The curriculum is designed to provide a sound intellectual foundation for the pursuit of theoretical and applied research in administrative and policy studies. The program includes courses in public policy and administration, research methods, public policy economics, political and organizational process, and law and public policy.

In addition to the core, the program offers three concentration areas including health policy, public management in state and local government and nonprofits, and urban policy.

These concentrations offer students the opportunity to build a tailored program of study within a broad area of scholarship. The range of core and affiliate faculty

expertise, from both the Academic and MCV campuses at VCU, gives doctoral students considerable flexibility in designing their studies and research.

Students take a minimum of 36 credits or 12 courses in addition to any prerequisites that might be necessary. Seven of these courses are part of the core and five are concentration courses. Required courses generally will be available on an evening or weekend schedule.

Course work in the doctor of philosophy program has a strong orientation toward research, both applied and theoretical. Where appropriate, course work may be linked to funded university projects or to external agency based analytical work. Courses emphasize research, writing and presentation skills.

### Core curriculum

PPAD 711 Seminar in Public Policy and Administration I  
 PPAD 712 Seminar in Public Policy and Administration II  
 PPAD 791 Law and Public Policy  
 PPAD 715 U.S. Political Processes and Institutions  
 PPAD 716 Public Policy Economics  
 PPAD 721 Survey of Applied Research Methods in Public Policy and Administration  
 PPAD 722 Survey of Data Analysis Techniques for Public Policy and Administration

### Concentrations

In addition to the core, all students will take five courses in their selected area of concentration. Each concentration features a required seminar as one of these courses.

**Health policy:** PPAD 730 Seminar in Health Policy  
**Public management in state and local government:**  
 PPAD 740 Seminar in Public Management  
**Urban policy:** PPAD 750 Seminar in Urban Policy

The remaining four courses will be selected from a list designated by the concentration committee for each area. At least one of these must be a methodologically oriented course relevant to the student's area. The concentration committee will approve the program of study for each student in the concentration.

### Qualifying examinations

After completing all of the core courses in the Ph.D. program, each student takes a comprehensive qualifying examination on

the core. The examination is designed to evaluate the mastery students have achieved over the body of knowledge represented by the core. It is intended to measure the ability of students to organize, integrate and creatively apply the knowledge in the field to important problems. Although organized around the courses in the core, the examination is not restricted to material covered in those courses. It is expected that doctoral students will read well beyond the confines of individual courses.

In order to continue in the program, students must attempt the qualifying examination no later than the next regular semester following their completion of the core course requirements, and they must pass the exam by the end of the second regular semester after completing the core course requirements. A student may attempt the examination twice. Examinations are offered twice per year.

A student also must take a comprehensive examination in the concentration. Each student, under the direction of the adviser, will prepare a reading list on the concentration or on a significant portion thereof. The student will then take an oral examination with his or her adviser based upon the reading list. A student may attempt the examination twice. Exams are scheduled at the convenience of the student and the adviser. Each student must pass this second examination before defending a dissertation proposal.

### Dissertation

After completing the qualifying examination and course work for the concentration, students must prepare a dissertation involving original research that contributes to the body of knowledge in the field. A committee approved by the director of the program supervises the dissertation work. The chair of the committee must be a core or affiliate faculty member of the Ph.D. program.

The first formal step in the dissertation process is the development and defense of a dissertation prospectus that frames the problem to be studied, provides background on the problem, presents a review of relevant literature and justifies the methodology to be used. The defense of the prospectus as well as the completed dissertation must be done orally to the dissertation committee. The dissertation defense is conducted in a forum open to other students and to faculty.

### Continuous enrollment requirements and expectations

To remain in good standing, students must maintain continuous registration for each fall and spring semester (except for official leaves of absence) until they have completed all requirements, including the dissertation. Students are required to enroll for a minimum of nine semester hours each calendar year. Once a student has completed all course requirements and passed the comprehensive examinations, he/she may maintain continuous enrollment of three credits of dissertation research per year. A minimum GPA of 3.0 on a 4.0 scale must be maintained. VCU currently requires registration for a defined credit hour level during both the didactic and research phases of advanced degree training. There is no obligatory linkage between the accumulation of credit hours and an expectation that a degree be awarded. As a guide to monitoring the timely completion of the degree within the present enrollment framework, the accumulation of 180 credits for a doctor of philosophy degree can be taken as a reasonable measure. Compliance with other relevant university regulations also is required.

While the university provides an array of computing facilities, most students find it desirable to have personal access to computing capacity, including Internet connection. The primary mode of communication between the program office and students is through the Internet and e-mail. Several classes use computer-based interactive technology such as newsgroups.

### Graduate courses in public policy and administration (PPAD)

#### PPAD 711 Seminar in Public Policy and Administration I

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Provides a critical and comparative review of public policy and administration focusing on the empirical and theoretical literature in the field. Emphasizes the development of the policy studies field and its epistemological foundations. Includes alternative approaches to policy analysis, the place of analysis in the decision-making environment, and the role of policy in shaping administrative institutions.

#### PPAD 712 Seminar in Public Policy and Administration II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PPAD 711. Doctoral students only.



Examines the key intellectual paradigms in public administration and their historical development. Pays particular attention to the influence of institutional and organizational design on establishing and achieving public purposes; includes the role of administration in formulating and implementing public policy. Continuation of PPAD 711.

#### **PPAD 713/PHIL 713 Ethics and Public Policy**

Semester course; 3 lecture hours. 3 credits. Doctoral students only. An examination of the main theories of morality and justice. These theories' implications for public policy will be discussed.

#### **PPAD 715 U.S. Political Processes and Institutions**

Semester course; 3 lecture hours. 3 credits. This course examines the operation of the major national political institutions in the United States, the processes that help to define and shape those institutions, and the contexts in which these entities operate. The course familiarizes students with a broad range of scholarship and with the principal theoretical debates about U.S. politics.

#### **PPAD 716 Public Policy Economics**

Semester course; 3 lecture hours. 3 credits. This course is designed to introduce students to a set of applied micro-economic models that can be used to understand and evaluate important policy issues. Students will be shown how these models can be used as tools to design, to predict the effects of and to evaluate public policies. Specific models used in this course will include consumer theory, production theory, cost theory and the theory of economic organization. Discussions of policy analysis and evaluation will rely upon theoretical approaches to welfare economics.

#### **PPAD 721 Survey of Applied Research Methods in Public Policy and Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 623 and PADM 624 or equivalent; doctoral students only. Research designs including assumptions, applications and limits of various research methodologies. Includes quantitative and qualitative methods, including focus groups; probability and nonprobability sampling; mail, telephone and in-person interviewing; design of instruments; evaluation research, experiments and quasi-experiments; content analysis; observational and unobtrusive methods; cost-benefit and forecasting models; sources for secondary data analysis; and ethics of research.

#### **PPAD 722 Survey of Data Analysis Techniques for Public Policy and Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 623, PADM 624 and PPAD 721, or equivalents; doctoral students only. Levels of measurement and selection of appropriate analytical tools; creation of indexes and scales; reliability and validity of measures; univariate, bivariate and multivariate analysis; the nature of causality and statistical control; the elaboration of relationships and the logic of survey analysis; graphical presentation of data; and analysis of qualitative data. Focus will be kept on integrating data and analysis into decisions regarding research design. SPSS/PC computer software will be used to illustrate analysis techniques on General Social Survey (GSS) or other relevant data sets.

#### **PPAD 730 Seminar in Health Policy**

Semester course; 3 lecture hours. 3 credits. Examines key issues and alternative policy responses in health. Presents a framework for understanding health policy in terms of the regulatory environment, developing initiatives and emerging trends. Designed to assist students to build a program of research in health policy.

#### **PPAD 740 Seminar in Public Management**

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Examines key theoretical and empirical literature in public sector administration with an emphasis on state and local government. Covers the management of human resource, financial and information systems. Includes the impact of leadership, organizational design and policy on the conduct of public activities. Designed to assist students to build a program of research in public management.

#### **PPAD 750 Seminar in Urban Policy**

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Examines key issues in urban policy. Explores public policy as it relates to the natural, built, social, economic and political environments of urban life. Designed to assist students to build a program of research in urban policy.

#### **PPAD 791 Topical Seminar**

Semester course; 1-3 credits. May be repeated for a maximum of six credits. Prerequisites: Doctoral standing and permission of program director and instructor. An in-depth study of a selected topic in public affairs, policy or administration.

#### **PPAD 792 Independent Study**

Semester course; 1, 2 or 3 credits. May be repeated for a maximum of six credits. Prerequisites: Doctoral standing and permission of program director and instructor. Independent study and research in selected areas of public affairs, policy and administration under the guidance of a graduate faculty member.

#### **PPAD 898 Dissertation Research**

Semester course; 1-12 hours. May be repeated for credit. Prerequisite: Admittance to doctoral candidacy. Research on an approved dissertation subject.



# VCU Life Sciences

VCU entered a new era when it implemented, as one of its highest priorities, a new university-wide matrix academic organization called VCU Life Sciences, created in response to the need to prepare students for the anticipated growth in new life sciences jobs in the coming decades. The skills identified for these jobs require highly interdisciplinary or multidisciplinary approaches, often falling between the boundaries of traditional academic disciplines. The way that the life sciences are understood and taught is likely to be fundamentally different, with increasing emphasis on systems biosciences as an important complement to more traditional, purely reductive approaches. The objective of Phase II of VCU's strategic plan specifically outlines the need to bring VCU's major academic and administrative divisions together to work on mutual initiatives that will accomplish VCU's goal of national leadership. VCU Life Sciences is a response to that objective.

## Faculty

VCU Life Sciences faculty are drawn from departments across the university. A list of participating faculty and academic affiliations is available on the VCU Life Sciences Web site (<http://www.vcu.edu/lifesci/>).

## Facilities

VCU Life Sciences comprises the resources and interests not only of the Academic Campus and the VCU Medical Center, but also the Virginia Biotechnology Research Park, and the Inger and Walter Rice Center for Environmental Life Sciences, a property of 342 acres overlooking the James River in Charles City County. A more complete description of the Inger and Walter Rice Center can be seen in the University Centers and Institutes section of the Appendix. The \$27 million Eugene P. and Lois E. Trani Center for Life Sciences houses the administrative offices, the two research centers described below, state-of-the-art laboratories and classrooms, a climate

controlled greenhouse and one of the largest aquatics laboratories in Virginia.

By establishing and/or maintaining research centers, core facilities and consortia, VCU Life Sciences is expanding VCU's large-scale life sciences research infrastructure. The research centers include the Center for the Study of Biological Complexity, the Inger and Walter Rice Center for Environmental Life Sciences, and the Center for Environmental Studies. The core facilities include the Bioinformatics Computational Core Laboratories of the CSBC, the MicroArraying Suite and the Satellite Lab of the Nucleic Acid Research Facility (NARF), the Mass Spectrometry Center for the Study of Biocomplexity, and the Environmental Technology Lab of the Center for Environmental Studies.

The Nucleic Acids Research Facility, the Mass Spectrometry Center for the Study of Biocomplexity, and the Bioinformatics Computational Core Laboratories support research specific to the Center for the Study of Biological Complexity. Plans are underway to create a VCU Proteomics Center, with operations on both campuses at VCU, which will be an important factor in allowing VCU researchers to remain competitive in the post genomic era.

## Centers

VCU Life Sciences encompasses two centers that are central to its mission: the Center for Environmental Studies, and the Center for the Study of Biological Complexity.

### Center for Environmental Studies

The Center for Environmental Studies is jointly administered by VCU Life Sciences and by the College of Humanities and Sciences. A more complete description of the Center can be found under University Centers and Institutes in the Appendix. The proposed new B.S. and B.S.-M.S. programs in Environmental Studies will be administered through the Center for Environmental Studies.

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#### Thomas F. Huff

Vice Provost for Life Sciences  
Ph.D.

#### Gregory A. Buck

Director of the B.S.-M.S. and M.S. Programs in Bioinformatics (pending SCHEV approval) and Director of the Center for the Study of Biological Complexity  
Ph.D.

#### Gregory C. Garman

Director of the B.S.-M.S. and M.S. Programs in Environmental Studies (pending SCHEV approval) and Director of the Center for Environmental Studies  
Ph.D.

#### Leonard A. Smock

Director of the Ph.D. Program in Integrative Life Sciences (pending SCHEV approval)  
Ph.D.

#### Herschell S. Emery

Director of Undergraduate Curricula  
Ph.D.

#### Jeffrey Elhai

Director of Bioinformatics and Bioengineering Summer Institute of the Center for the Study of Biological Complexity  
Ph.D.

#### Jacqueline T. McDonnough

Director of the Governor's School for Medicine and Life Sciences  
Ph.D.

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## Center for the Study of Biological Complexity

The Center for the Study of Biological Complexity is a new multidisciplinary focus of research and scholarly activity within VCU Life Sciences. A more complete description of the Center can be found under University Centers and Institutes in the Appendix. The Center for the Study of Biological Complexity will administer the proposed new B.S. and B.S.-M.S. programs in Bioinformatics.

## Programs

VCU Life Sciences is in the process of establishing new degree programs that directly address the need to prepare students for the exploding growth in careers in the life sciences. The solution will require highly interdisciplinary and multidisciplinary approaches, often falling between the boundaries of traditional academic disciplines. It will require increasing emphasis on systems biosciences as an important complement to more traditional, purely reductive approaches. VCU Life Sciences will offer degree programs that include bachelor's degrees, combined bachelor's-master's degrees, master's degrees and doctoral degrees.

## Programs in the approval process

A master of science degree in environmental studies has been developed by the Center for Environmental Studies in VCU Life Sciences and the College of Humanities and Sciences and is moving through the approval process. The anticipated start date of the new program is fall 2003.

A master of science degree program in bioinformatics has been developed by the Center for the Study of Biological Complexity in VCU Life Sciences and is moving through the approval process. The anticipated start date of the new program is fall 2004.

A new Ph.D. program in Integrative Life Sciences has been developed by VCU Life Sciences and is moving through the approval process. The anticipated start date of the new program is fall 2003. A new Ph.D. program in Medical Physics has been developed by VCU Life Sciences and the College of Humanities and Sciences and is moving through the approval process. The anticipated start date of the new program is fall 2004. Refer to the School of Graduate Studies Web site at <http://www.vcu.edu>

/graduate for updates on the proposed graduate degree programs.

## Graduate courses in bioinformatics (BIOF)

### BIOF 505 Essentials of Statistics in Bioinformatics

Semester course; 2 lecture hours. 2 credits.

Prerequisites: STAT 212 and permission of instructor. An intensive course designed for graduate students in either the biology/genomics or the computational science tracks of the bioinformatics program, aimed at providing the background in statistical concepts necessary for them to participate in graduate-level courses involving statistics. The course will focus on areas of particular interest in bioinformatics, including probability, combinatorics and linear models.

### BIOF 507 Essentials of Molecular Biology in Bioinformatics

Semester course; 2 lecture hours. 2 credits.

Prerequisites: CHEM 101 and 102, BIOL 218 and permission of instructor. Corequisite: CHEM 301 or permission of instructor. An intensive course designed for graduate students in either the quantitative/statistics or the computational science tracks of the bioinformatics program, aimed at providing the background in molecular biology necessary for them to participate in graduate-level courses involving molecular biology. The course will focus on areas of particular interest in bioinformatics, including DNA, RNA and protein synthesis, gene structure, function and regulation, protein structure, activity and regulation, and the tools by which formation in these areas has been discovered.

### BIOF 508 Introduction to Bioinformatics Research

Semester course; lectures and 4 laboratory hours. 3 credits. Offered I and II. Prerequisite: Permission of instructor. Required of all first year students pursuing the thesis option. Introduction to all active research programs in bioinformatics. Presentations of research programs by investigators and rotation of students through track-appropriate faculty labs to gain direct exposure to individual research projects. Graded as "S," "U" or "F."

### BIOF 591 Special Topics in Bioinformatics

Semester course; variable lecture hours. 1-4 credits. Adviser's approval is required for counting each special topics course toward meeting specific requirements of the M.S. program. An introductory, detailed study of a selected topic in bioinformatics unavailable as an existing VCU course. If multiple topics are offered, students may elect to take more than one. Students will find specific topics and prerequisites for each special topics course listed in the Schedule of Classes. Graded as "S," "U" or "F."

### BIOF 592 Independent Study

Semester course; variable lecture hours. Variable credits. Determination of the amount of credit and permission of instructor, adviser and curriculum committee must be obtained prior to registration for this course. Designed to provide an opportunity for independent study at an introductory graduate level in a bioinformatics-related area of interest and significance to the student outside what is available through the courses

and other options in the Bioinformatics Program. Graded as "S," "U" or "F."

### BIOF 601 Integrated Bioinformatics

Semester course; 3 lecture hours. 3 credits.

Prerequisite: Permission of instructor. Presents major concepts in bioinformatics through a series of real-life problems to be solved by students. Problems addressed will include but not be limited to issues in genomic analysis, statistical analysis and modeling of complex biological phenomena. Emphasis will be placed on attaining a deep understanding of a few widely used tools of bioinformatics.

### BIOF 620 Bioinformatics Practicum

Semester course; 3 lecture hours. 3 credits.

Prerequisite: BIOF 601 or permission of instructor. Restricted to students pursuing the professional option. Practical application of bioinformatics to genomic, proteomic and pharmacogenomic analyses. Students will work in small groups to plan, develop and execute a project designed to solve practical challenges in the realm of bioinformatics. Proficiency in various aspects of bioinformatics will be developed.

### BIOF 650 Sequence Analysis in Biological Systems

Semester course; 1 lecture and 2 laboratory hours. 3 credits. This course will treat the computational theory behind algorithms that are used for nucleic acid and protein sequence analysis. Students will be exposed to the theory and methodology of computational biology that has led to the development of current sequence analysis software. The objective of the course is to provide students with a basic knowledge of how current software tools have been developed and how they function, which will permit them to then apply this knowledge to the development of new algorithms and technology.

### BIOF 690 Seminars in Bioinformatics

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research topics of current interest in the field of bioinformatics. Graded as "S," "U" or "F."

### BIOF 691 Special Topics in Bioinformatics

Semester course; variable hours. 1-4 credits. Adviser's approval is required for counting each special topics course toward meeting specific requirements of the M.S. program. An advanced, detailed study of a selected topic in bioinformatics unavailable as an existing VCU course. If multiple topics are offered, students may elect to take more than one. Students will find specific topics and prerequisites for each special topics course listed in the Schedule of Classes.

### BIOF 692 Independent Study

Semester course; variable hours. Variable credit. Determination of the amount of credit and permission of the instructor, adviser and curriculum committee must be obtained prior to registration for this course. A course designed to provide an opportunity for independent study in a bioinformatics-related area of interest and significance to the student outside what is available through the courses and other options in the Bioinformatics Program.

### BIOF 697 Directed Research in Bioinformatics

Semester course; variable hours. 3-9 credits; may be repeated for credit. Directed research leading to the M.S. degree in bioinformatics. Graded as "S," "U" or "F."

**BIOF 700 Externship in Bioinformatics**

Semester course; variable hours. 6 credits.

Prerequisites: BIOF 601 and BIOF 620, or permission of instructor. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting under supervision of an approved professional. Externship activities monitored and evaluated by university faculty. Plan of experience designed by extern and external adviser with prior approval of department. An externship class will meet weekly using online technology to accommodate students doing out-of-town summer externships. Each externship will be a defined project leading to a required final report or product and offering real potential benefits to the sponsoring company/lab. Subsequent to the externship, a presentation to program faculty and students is required.

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**Graduate courses in life sciences (LFSC)**


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**LFSC 510 Integrative Life Sciences I: Biological Complexity**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: BIOL 310 and 317, CHEM 302, PHYS 202, MATH 200 or equivalents or permission of the instructor. Opened to qualified seniors and graduate students only. An introduction to the basis of complexity theory and the principles of emergent properties within the context of integrative life sciences. The

dynamic interactions among biological, physical and social components of systems are emphasized, ranging from the molecular to ecosystem level. Modeling and simulation methods for investigating biological complexity are illustrated.

**LFSC 520 Integrative Life Sciences II: Bioinformatics Technology**

Semester course; 2 lecture hours. 2 credits.

Prerequisites: LFSC 510 Integrative Life Sciences I: Biological Complexity or permission of the instructor. Introduction to the hardware and software used in computational biology, proteomics, genomics, ecoinformatics and other areas of data analysis in the life sciences. The course also will introduce students to data mining, the use of databases, meta-data analysis, and techniques to access information.

**LFSC 610 Analytical Methods in Biocomplexity Analysis**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: LFSC 510 or equivalent, or permission of the instructor. An introduction to mathematical and computational methods in biocomplexity analysis and the mathematical and computational simulation of biological systems. Topics include methods for dynamical systems analysis, nonlinear systems analysis, gene sequencing, fractals and chaos, and pattern recognition. Students will be exposed to Maple, Matlab, SPSS, E-cell, BioPerl, Epigram, and C.

**LFSC 630 Integrative Life Sciences III: Integrative Life Sciences Research**

Semester course; 2 lecture hours. 2 credits. An introduction to integrative research in the life sciences from the molecular to ecosystem level. The course will include presentations on ongoing interdisciplinary and systems-oriented life sciences research by faculty members and discussion and analysis of classic interdisciplinary research projects.

**LFSC 690 Research Seminar in Integrative Life Sciences**

Semester course; 1 lecture hour. 1 credit. May be repeated for credit. Presentation and discussion of research topics of current interest in the life sciences. Graded as "S," "U" or "F."

**LFSC 697 Directed Research in Integrative Life Sciences**

Semester course; Variable lecture/laboratory hours. 1-15 credits. May be repeated for credit. Directed research leading to the Ph.D. degree in Integrative Life Sciences.



# College of Humanities and Sciences

## Graduate Programs

The College of Humanities and Sciences was organized in 1966 (then the School of Arts and Sciences) as a combination of several existing departments at Richmond Professional Institute: Biology, Chemistry, English, Foreign Languages, and History and Political Science. The departments of Philosophy and Religious Studies, Mathematical Sciences, Physics, Psychology, Sociology and Anthropology, and Political Science were developed or added subsequently.

Arts and Sciences began its first graduate programs in 1969 with the master's programs in psychology and sociology. Master's programs in biology and mathematical sciences and a doctoral program in clinical psychology were soon to follow in 1971. In 1974, English/English education began a master's program cooperatively between the Department of English and the Division of Teacher Education of the School of Education. In that same year the graduate program in chemistry, a cooperative venture between the departments of Chemistry on the Academic Campus and Pharmaceutical Chemistry on the MCV Campus, was transferred administratively to the School of Arts and Sciences. Beginning in 1976, a master's degree was created in mass communications while in

1978, a doctoral program in social policy and social work started in cooperation between the Department of Sociology and Anthropology and the School of Social Work.

In July 1981, the School of Arts and Sciences and the Department of Mass Communications were organized into the College of Humanities and Sciences and the School of Mass Communications. The Master of Fine Arts in Creative Writing commenced in 1983 followed by the M.S. in Physics in 1984. Three years later, the Department of Mathematical Sciences established the M.S. in Computer Science Program, and finally, a master's degree in history was initiated in 1994 through the Department of History.

Effective July 1, 1994, the departments of Criminal Justice, Public Administration and Urban Studies joined the college from the dissolved School of Community and Public Affairs. Each department brought to the college both master's and post-baccalaureate certificate programs within their disciplines. The Public Administration Program was merged with the Political Science Program to form the Department of Political Science and Public Administration. The Doctor of Public Administration Program was initially incorporated into the

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Assistant Dean  
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newly merged department and now resides in the Center for Public Policy.

## Graduate programs

The College of Humanities and Sciences offers the following graduate degree programs:

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M.A. in English
M.A. in History
M.F.A. in Creative Writing
M.I.S. in Environmental Studies (pending SCHEV approval as a stand-alone M.S. degree program)
M.P.A. in Public Administration
M.S. in Biology
M.S. and Ph.D. in Chemistry
M.S. in Criminal Justice
M.S. in Forensic Science (pending SCHEV approval as a stand-alone M.S. degree program)
M.S. in Mass Communications
advertising
scholastic journalism
M.S. in Mathematical Sciences
applied mathematics
mathematics
operations research
statistics

M.S. in Physics  
M.S. and Ph.D. in Psychology  
clinical  
counseling  
general  
M.S. in Sociology  
M.U.R.P. in Urban and Regional Planning

#### Post-baccalaureate certificates

Applied Social Research  
Criminal Justice  
Environmental Studies (Undergraduate)  
Nonprofit Management  
Planning Information Systems  
Public Management (Graduate)  
Statistics (Undergraduate)  
Urban Revitalization

In addition to these degree programs, the College of Humanities and Sciences offers selected graduate courses in the departments of Foreign Languages and Philosophy and Religious Studies. It does not offer graduate degree programs in these departments.

### Admission requirements

In addition to the general requirements for admission to graduate studies as stated in the Graduate Studies at VCU chapter of this bulletin, persons seeking admission to any of the graduate programs in humanities and sciences should:

1. have a bachelor's degree in the discipline in which application for graduate study is made or, in some programs as noted, a bachelor's degree in some other appropriate area,
2. submit Graduate Record Examination (GRE) scores (some departments require the scores on the advanced GRE within the discipline; some departments accept LSAT and MAT scores in lieu of GREs) and,
3. have submitted letters of recommendation which comment on the applicant's ability to undertake graduate study in the specified area.

All applications will be considered in terms of the specific requirements for admission noted in the description of the individual programs and of the applicant's ability to perform satisfactorily in the program for which he/she has applied. The judgment of that ability will be based on the supporting material submitted with the application. Some graduate programs must limit enrollment to a fixed number of the best-qualified applicants. Final action on admission is taken by the dean of the School of Graduate Studies in consultation

with the College of Humanities and Sciences and the department concerned.

Applicants whose applications reach the university after July 1 for the fall semester and after Nov. 15 for the spring semester may not have their applications processed in time for registration. The applicant whose application arrives late may be considered for admission as a special student, but there is no guarantee that the special student will be accepted later into a degree program. Refer to the Graduate Curriculum Requirements chart in the back of this bulletin for specific deadlines for all graduate programs.

### Registration

Although most students register for the first semester, which begins in August, they may arrange to begin graduate work during the spring semester except for the program in clinical and counseling psychology.

### Scholarships, assistantships, fellowships and other financial assistance for graduate students

\* Also see departmental listings.

The College of Humanities and Sciences seeks to attract and support graduate students of the highest caliber and to prepare them, through research and instruction, to meet local and national needs for highly trained men and women. Recognizing that financial limitations may inhibit some qualified students from applying, the college attempts to inform students of the options of various loans, grants and work-study opportunities that are available to them and to assist them in financing their education by offering various forms of financial aid and by facilitating the process of seeking financial assistance from external sources. Additionally, the college believes that the experience of being a teaching or research assistant reinforces the learning that takes place in the classroom. The value of teaching assistants is also recognized as being beneficial to the college's undergraduate programs.

Types of financial aid that are available to graduate students falls into three basic categories: aid that does not have to be repaid (grants, scholarships and tuition waivers), aid that does have to be repaid (loans) and aid that enables students to earn a portion of their school costs (work-study, graduate teaching assistantships and graduate research assistantships).

Offers of financial aid are based on financial need and/or skill and competency. Financial need is determined by information contained in the Federal Application for Student Aid (FAFSA) completed by the student. Not all financial aid is based on financial need. To ascertain your eligibility for the different types of financial aid, contact the VCU Office of Financial Aid at 901 W. Franklin St., P.O. Box 843026, Richmond, VA 23284-3026, (804) 828-6669, and the department to which you will be applying. The university library has reference books listing other types of scholarships and grants. International students should contact: Office of International Education at 916 W. Franklin St., P.O. Box 843043, Richmond, VA 23284-3043, (804) 828-6016.

Graduate teaching assistantships and graduate research assistantships are forms of financial aid that provide teaching and research positions for graduate students within their field of study. These are not loans and do not have to be repaid because the student is actually earning income for services rendered. Usually graduate assistants must work the equivalent of 20 hours per week. Assistantships are awarded to students who have demonstrated academic excellence. Individual departments award the assistantships, which usually include payment of tuition; the teaching and/or research duties of graduate assistants vary among departments. Graduate students interested in seeking these teaching and research positions are advised to contact the departments to which they will apply for admission.

Graduate students applying for financial assistance should remember the following tips:

- apply early
- use federal tax forms to complete the Federal Application for Student Aid (FAFSA)
- save copies of all forms completed, including tax returns
- check with the specific department for application requirements and deadlines

Students should assume they are eligible, not ineligible.

### The student adviser and the graduate committee

All departments offering graduate degrees in the College of Humanities and Sciences provide graduate students with advising



either through a single adviser, the student's graduate committee or a departmental graduate committee. For details, students should consult the departmental director of graduate studies or the departmental chair.

## Graduate degree requirements

- Full-time graduate status shall consist of a minimum of nine and a maximum of 15 credits per semester. No more than 12 semester credits may be earned in a summer session. See the Graduate Studies at VCU chapter of this bulletin for course load requirements for students awarded graduate assistantships.
- Graduate students are required to maintain an overall GPA of 3.0 ("B"). Students who do not maintain a "B" average during the course of their program may be dropped from the program at any time on recommendation of the appropriate department committee to the dean of the School of Graduate Studies. If students earn less than a "B" on 20 percent or more of all attempted credits, their graduate status must be reviewed for continuation by the appropriate department committee.
- At least half of the credits required in the student's program must be those designated as exclusively for graduate students; that is, those at the 600 level or above.
- Graduate students must have earned an overall GPA of 3.0 ("B") in order to receive a degree.

In addition to these requirements and those set forth in the Graduate Studies at VCU chapter of this bulletin, students must meet the requirements for specific degrees set forth in the departmental listings. Students should also consult the Continuous Enrollment Policy stated in the Graduate Studies at VCU chapter of this bulletin.

VCU requires registration for a defined credit hour level during both the didactic and research phases of advanced degree training. For programs requiring the preparation of a thesis or dissertation, there is no obligatory linkage between the accumulation of credit hours and an expectation that a degree be awarded.

As a guide to monitoring the timely completion of the degree requiring a thesis or dissertation within the present enrollment framework, the accumulation of 80 credit hours for a master's degree and 180 credit hours for a doctor of philosophy

degree can be taken to be reasonable credit maxima. Unless stated otherwise, these figures apply only to programs offered by the College of Humanities and Sciences.

Students are required to submit in advance of the date when they expect to receive a degree a Graduation Application Form to the dean of the College of Humanities and Sciences. Deadlines for the submission of the Graduation Application Form are listed in the calendar at the front of this bulletin; for departmental deadlines the student should consult the departmental adviser. Individual departments may require additional forms.

## Appeal procedures

Graduate students in the College of Humanities and Sciences have the right to appeal course grades or other academic actions on the grounds of a breach of due process. See the Graduate Studies at VCU chapter of this bulletin for a summary of the Grade Review Procedure. An appeal of an academic action other than a grade review is governed by the Graduate Student Academic Appeal Procedure. A copy of this document can be obtained from department offices.

## School of Government and Public Affairs

On May 16, 2003, the Board of Visitors of Virginia Commonwealth University approved the creation of the School of Government and Public Affairs within the College of Humanities and Sciences. The School of Government and Public Affairs is an interdisciplinary unit that builds on the strengths of existing disciplines in the social sciences and professional arenas to provide its students with the knowledge, skills and experience necessary for success, whether in careers in public service or in advanced study. The school actively fosters and promotes a wide range of endeavors, including traditional and interdisciplinary graduate programs. Included in this new school are the programs of study leading to the Master of Science in Criminal Justice, Master of Public Administration, Master of Urban and Regional Planning, along with the graduate certificate programs in Criminal Justice, Planning Information Systems, Public Management, Nonprofit Management and Urban Revitalization. Because this change was approved after the date for major changes in this Graduate and Professional Programs Bulletin, information on these programs may be found in

the listings for the departments of Criminal Justice, Political Science and Public Administration, and Urban Studies. Refer to the Web at <http://www.vcu.edu/bulletins> for updates.

## School of Mass Communications

- Boyko, Rick., Professor and Managing Director, VCU Adcenter
- Chumley, Timothy H., Assistant Professor  
B.F.A. Southern Methodist University
- Cotzias, Constantin G., Associate Professor  
M.B.A. New York University
- Donohue, Thomas R., Professor  
Ph.D. University of Massachusetts  
Mass media effects.
- Faison, Brenda Smith, Associate Professor  
Ph.D. Ohio State University  
Media graphics.
- Govoni, Jean, Associate Professor  
B.F.A. Syracuse University  
Advertising creative.
- Kenamer, J. David, Associate Professor  
Ph.D. University of Wisconsin-Madison  
Communications theory, research methodology.
- Kouns IV, Charles W., Associate Professor  
B.S. and B.A. Virginia Commonwealth University  
Advertising account management, account planning.
- Nicholson, June O., Associate Professor  
M.A. The American University  
Print journalism.
- Otto, Paula I., Associate Professor and Assistant Director  
M.A. American University  
Electronic journalism, television.
- Ryan, Tracy Tuten, Assistant Professor  
Ph.D. Virginia Commonwealth University  
Advertising research, media.
- Sims, Will, Assistant Professor  
M.S. Virginia Commonwealth University  
Advertising creative.
- South, Jeff, Associate Professor  
B.A. University of Texas  
Print journalism, new media, computer-assisted reporting.
- Smith III, Ted J., Associate Professor  
Ph.D. Michigan State University  
Media-government relations, research methodology.
- Thomas, Clarence, Associate Professor and Director of Graduate Studies  
Ph.D. University of Florida  
Media history, media and society, media management, broadcasting.
- Turk, Judy VanSlyke, Professor and Director  
Ph.D. Syracuse University  
Public relations, civic journalism.
- Wenger, Debora Halpern, Associate Professor  
M.A. University of North Carolina  
Journalism convergence, new media, broadcast journalism.

Wirt, Wilma H., Associate Professor  
M.A. University of Texas  
Urban journalism reporting.

The School of Mass Communications has two programs that lead to a master of science degree — one in scholastic journalism and the other in advertising offered through the VCU Adcenter.

The program in scholastic journalism is designed for secondary school teachers of journalism to prepare them for their role of training high school students and managing student publications as well obtaining journalism endorsement and/or maintaining certification. This program consists of at least 35 credits, 17 of which are required courses in the School of Mass Communications. Two additional courses (six credits) are taken from sets of mass communications electives. The remaining nine credits are taken in courses external to the School of Mass Communications.

The school's second program offers graduate studies in advertising at the VCU Adcenter. The program, provides advanced preparation with concentrations in creative and strategic advertising development. The curriculum is divided into three tracks: art direction, copywriting and strategy (which includes account planning, account management and media strategies). The working environment at the Adcenter is similar to an advertising agency: teams of student art directors, writers and strategists work together to develop campaigns.

After the first year, qualified students are offered internships where they experience ad agency life and foster industry relationships. In their second year, students are given the opportunity to network through a mentoring program in which students are matched with agency professionals who offer advice and assistance.

## Overall admission requirements

Both programs are open to graduates of accredited colleges and universities. Applicants must satisfy the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences (see Humanities and Sciences guidelines in this bulletin). In addition, they should hold a baccalaureate degree in an area appropriate to the program to which they are applying and a GPA that indicates the ability to pursue graduate work. Although the type of undergraduate degree is not critical to

admission, the programs require approved undergraduate curricula or the equivalent in order to grant full admission.

## Scholastic Journalism Program (pending final approval)

In addition, applicants to the scholastic journalism program must submit:

- Three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate school. If the applicant seeks endorsement or re-certification for teaching journalism in a secondary school, one of these recommendation letters must be from a school principal.
- A letter detailing career goals and how the M.S. degree program in scholastic journalism applies to those goals.
- Acceptable scores on the GRE.

Provisional admission may be granted under certain circumstances.

## Degree Requirements

The master's program in Scholastic Journalism requires a minimum of 35 credit hours beyond the baccalaureate degree. The hours are divided as follows:

<b>MASC core courses</b>	credits
MASC 501 Journalistic Writing	17
MASC 502 Editing the News	
MASC 621 Basic Photojournalism	
MASC 607 Student Press Law Rights and Responsibilities	
MASC 613 Mass Media and Society	
One of the following two courses	3
MASC 519 Journalism in the Schools	
MASC 520 Advising Scholastic Publications	
Six credits from the following courses	6
MASC 603 Scholastic Yearbooks	
MASC 604 Broadcasting in High Schools	
MASC 605 Technology in the Classroom	
MASC 606 Contemporary Newspaper Design	
MASC 611 Research Methods in Mass Communications	
MASC 612 Mass Communications Theory	
MASC 691 Topics in Mass Communications	
Nine credits from courses outside of the School of Mass Communications	9
Thesis in lieu of required standardized comprehensive exams only by permission of the Graduate Committee	0-3
35-38 total hours	

All candidates must establish a three-member examination/thesis committee by the third full-time semester or equivalent. The candidate must nominate a chair and a second member from the School of Mass Communications graduate faculty along with a third member from the graduate faculty outside of the School of Mass Communications.

## Advertising Program

In addition, applicants to the advertising program must submit:

- Three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate and in the field of advertising.
- Ten samples of non-returnable work.
- A personal profile.
- Other materials specified by the intended curricular track within the advertising program.

A full description of all the Adcenter requirements is included in the VCU Adcenter Application kit, which is available on the Web at [www.adcenter.vcu.edu](http://www.adcenter.vcu.edu) or by calling the VCU Adcenter toll free at (800) 311-3341. Applications must be postmarked no later than June 1 prior to the fall semester for which admission is sought.

## Degree requirements

The master's program in Advertising requires a minimum of 42 hours beyond the baccalaureate degree. Students devote two years of full-time study to complete the degree requirements. To graduate, students must present a final major project, in portfolio form, before a committee review panel.

All students in the Advertising Program must complete the following set of core courses:

<b>Core curriculum</b>	credits
MASC 622 Documentary Production	3
MASC 623 Ethics in Mass Communications	3
MASC 650 Perspectives in Advertising	3
MASC 651 Creative Thinking for Advertising	3
MASC 655 Non-traditional Advertising Campaigns	3
MASC 698 Portfolio Review	1
MASC 699 Thesis	1
Elective (outside MASC)	3
<b>Total</b>	<b>20</b>

Specific requirements for each of the three Advertising Program tracks:

**Art direction curriculum** credits

MASC 601 Advertising Technology for Art Directors	3
MASC 630 Advertising Layout and Typography	3
MASC 631 Advanced Art Direction/Ad Layout Tech	3
MASC 652 Advertising Concept Development	3
MASC 653 Advanced Advertising Concept Development	3
MASC 657 Broadcast Development and Production	4
MASC 696 Ad Portfolio Development	3
<b>Total</b>	<b>22</b>

**Copywriting curriculum** credits

MASC 602 Advertising Technology for Copywriters and Strategists	2
MASC 640 Copywriting Techniques I	4
MASC 641 Advanced Copywriting Techniques	3
MASC 652 Advertising Concept Development	3
MASC 653 Advanced Advertising Concept Development	3
MASC 657 Broadcast Development and Production	4
MASC 696 Advertising Portfolio Development for Copywriters and Art Directors	3
<b>Total</b>	<b>22</b>

**Strategy curriculum** credits

MASC 602 Advertising Technology for Copywriters and Strategists	2
MASC 629 Strategic Thinking	3
MASC 649 Strategic Insight Development	3
MASC 656 Advanced Strategic Insight Development	3
MASC 658 Account Leadership	2
MASC 661 Advertising Media Research and Planning	3
MASC 662 Advertising Research Methods	3
MASC 697 Advertising Portfolio Development for Strategists	3
<b>Total</b>	<b>22</b>

**Graduate courses in mass communications (MASC)****MASC 501 Journalistic Writing**

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: School's permission. Typing skill required. See School of Mass Communications for details. A concentrated course in journalistic writing, including news, features, sports, columns, and editorials.

**MASC 502 Editing the News**

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: School's permission. A concentrated course in editing for journalistic publications. Course will include copy editing, headline writing, publications page make-up and design, and editorial decision making.

**MASC 519 Journalism in the Schools**

Semester course; 3 lecture hours. 3 credits. Study of school newspapers, magazines, and yearbooks: problems relating to staff selection, content of publications, copy layout, advertising, and business phases.

**MASC 520 Advising Scholastic Publications**

Semester course; 3 lecture hours. 3 credits. Designed for new advisers. The goals of this class are to introduce the fundamentals of scholastic journalism and to provide a foundation in the management skills necessary to teach journalism and advise a student publication. The course covers the role of the adviser, the role and scope of the publication, financing the publication, production schedules, advertising sales and design, legal and ethical issues, staff morale, student evaluation, working with key outsiders and with sources. Students will develop a staff manual for a school's publication.

**MASC 601 Advertising Technology for Art Directors**

Semester course; 3 laboratory hours. 3 credits. Restricted to Adcenter students only. This course covers technology applications applicable to art directors. Students will learn how to create and manipulate pre-existing images using Adobe Photoshop for the Macintosh. This class also includes instruction on scanning and digital photography. It will cover topics in applications that are instrumental in the development of advertising materials, including silhouetting, adding shadows, managing layers, managing file formats, color correction, complex compositioning of multiple images, and the application of filters for various effects. Additionally this course covers scanning, digital photography, and page layout techniques applicable for art directors. Students will learn how to create and manipulate documents (ads) using QuarkXPress for the Macintosh. The course will cover all aspects of ad production, including typesetting, image placement, document management, master pages, color output and an extensive study of typography commands.

**MASC 602 Advertising Technology for Copywriters and Strategists**

Semester course; 2 laboratory hours. 2 credits. Restricted to Adcenter students only. This course covers a number of computer applications, all of which are valuable to copywriters. Students will learn how to create and format documents using Microsoft Word for the Macintosh, including placement of images and manipulation of text from various sources such as the Internet. Students will learn how to create computer presentations with Microsoft PowerPoint for Macintosh. This course will teach the basics of page layout, including formatting documents, placement of images and basic typography. Additionally, students will learn how to use a scanner to capture images into Adobe Photoshop, and basic image modification techniques, such as brightening and sharpening, silhouetting and image and saving the image. Additionally this course covers the appropriate applications designed to capture and edit digital video, and will include discussion of the use of the Adcenter's digital video cameras, and other accessories such as external microphones and lights.

**MASC 603 Scholastic Yearbooks**

Semester course; 3 lecture hours. 3 credits. Prerequisite: School's permission. The organization, staffing, content, illustration use, production tech-

niques, typography, style, theme, advertising, and business functions of a scholastic yearbook. The role of the yearbook adviser will be emphasized.

**MASC 604 Broadcasting in High Schools**

Semester course; 3 lecture hours. 3 credits. Prerequisite: School's permission. An examination of radio and television as student media in high schools. Broadcasting principles, directing and producing high school broadcast programs, using basic broadcast equipment. Emphasis is upon the role of the adviser-teacher.

**MASC 605 Technology in the Classroom**

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Beginning with a brief treatment of basic desktop publishing skills, students will learn layout and design using newspaper, magazine and yearbook models. They will master the functions of Photoshop, Illustrator, Adobe PageMaker and/or Quark Xpress and create promotional fliers/brochures and advertisements for their journalism programs. They will set templates and a style palette for school publications.

**MASC 606 Contemporary Newspaper Design**

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: MASC 502 and 605. Students will study advanced layout and design techniques using professional newspaper models, including design fundamentals and the latest trends. They will learn to combine informational graphic techniques, photography and the printed word to increase the readability of their publications and to take advantage of the range of information technologies and techniques available.

**MASC 607 Student Press Law Rights and Responsibilities**

Semester course; 3 lecture hours. 3 credits. A review of student press law with special attention to the responsibilities of student journalists and their advisers. An in-depth study of current cases that includes student press freedom and censorship, libel, privacy invasion, copyright law and ethical decision-making plus advisers' rights. Emphasis will be on the First Amendment rights in publishing secondary-education publications. Additional topics will include ethical and legal issues surrounding Internet usage in reporting and online editing.

**MASC 611 Research Methods in Mass Communications**

Semester course; 3 lecture hours. 3 credits. Fundamentals of mass communications research techniques (content analysis, survey research, experimental design, historiography), including an overview of computer applications, statistics, theory development, and trends in the published literature.

**MASC 612 Mass Communications Theory**

Semester course; 3 seminar hours. 3 credits. Nature, function, and application of mass communications theory; structure, content, and effects of media systems; social and technological events accounted for by a generalized theory of mass communications.

**MASC 613 Mass Media and Society**

Semester course; 3 seminar hours. 3 credits. A study of the mass media of the United States, with special attention to their historical development and their impact on other institutions. Consideration of ethical and legal aspects of the media, and problems such as access, control, and accountability.

### **MASC 614 Media-governmental Relations**

Semester course; 3 seminar hours. 3 credits. Study of the interaction between the media and the government, and the role of the press in the governmental process as a disseminator, opinion-maker, and adversary.

### **MASC 615 Depth Reporting**

Semester course; 3 seminar hours. 3 credits. Prerequisites: Three undergraduate reporting courses or permission of instructor. A thorough examination of one or more issues in the forefront of the news, the environment, education, health care, science and others relevant to today's readers.

### **MASC 616 Mass Communication Law**

Semester course; 3 lecture hours. 3 credits. An intensive examination of media rights and restrictions, including libel, privacy, access to information, copyright, free-press fair-trial. Attention will be given to First Amendment theory, research techniques and administrative regulation of broadcasting and advertising.

### **MASC 617 Advanced Research Methods**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 611. An examination of a mass medium through design and execution of a research project using one of the traditional research techniques of the field. Students will have major and minor projects for systematic study of a medium.

### **MASC 618 Media Economics and Management**

Semester course; 3 colloquium hours. 3 credits. Prerequisites: MASC 611 and 617. Advanced work in media management research based on an examination of major contemporary issues and challenges concerning media management and economics. Student interaction with faculty, media managers and each other will lead to the design and implementation of major problem-solving projects.

### **MASC 619 Media and Public Opinion**

Semester course; 3 lecture hours. 3 credits. A study of the role of the mass media in the formation and change of beliefs and attitudes, the involvement of the media with policy makers in shaping public opinion and public policy, and the interaction of media and public opinion polling.

### **MASC 620 Seminar in Mass Communications History**

Semester course; 3 credits. An examination of historical methodology and content as related to the investigation and writing of mass communication history in the United States. Special attention is placed on the adaptation and the use of historical method by mass communications historians.

### **MASC 621 Advanced Public Relations**

Semester course; 3 lecture hours. 3 credits. Students will explore a variety of case studies, decision-making analyses and advanced public relations programming in relation to private and public policy-making at the senior levels of management.

### **MASC 622 TVR Documentary**

Semester course; 3 credits. Prerequisite: Permission of instructor is required. Knowledge of documentary history and development is preferred. Research, development, and production of a television documentary. Class members will work on single theme documentary as a team. Topic will be decided by the instructor

in conjunction with the schedule of the Public Broadcasting Station in Virginia.

### **MASC 623 Ethics in Mass Communications**

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Examination and analysis of contemporary issues and problems in conventional and new media. Focus will be on the philosophical foundations of ethical decision making with applications to one or more of the areas of practice in mass communications: advertising, journalism, public relations and news media. Implications of ethical practice for both the audiences and creators of communications messages will be studies.

### **MASC 624 Basic Photojournalism**

Semester course; 2 lecture and 3 laboratory hours. 3 credits. An introduction to photojournalistic techniques and practices including how to teach a student publication staff to recognize good pictures and how to use them well in their publications. An overview of photo-compositional elements, photographic technology basics and snapshots of what magazine, newspaper and yearbook photojournalists should know.

### **MASC 629 Strategic Thinking**

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Contrasting historically rigid ways of approaching problems to newer, more dynamic approaches will prepare students to professionally engage a constantly shifting world of business, consumer, political and economic forces. Students will engage in semester-long projects to develop new ways of thinking strategically, including writing a strategic plan and scenario plans (the art of looking ahead and envisioning various realities for a company). Students will work directly with local small business owners in developing and formally presenting relevant strategies.

### **MASC 630 Advertising Layout and Typography**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Utilizes in-class workshops and projects to develop students' ability to incorporate effective typography into the visual elements of advertising. Focuses on various typographic design trends and layout techniques to effectively communicate information in various print media. Introduces new computer technology that helps students address cutting-edge issues in modern advertising.

### **MASC 631 Advanced Art Direction/Advertising Layout Techniques**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 630 and MASC 651. This course explores management issues affecting advertising art directors in complex projects; that encompass more than one media. Focus is on skills needed to manage studio artists, photographers, illustrators, engravers and printers in the production of advanced advertising layouts. Problem-solving exercises will be used to address common issues.

### **MASC 640 Copywriting Techniques**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on developing ability to create well-written, creatively focused advertising copy work. Addresses headline and body copy issues through presentation of students' work and research on major copywriters and their work.

### **MASC 641 Advanced Copywriting Techniques**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 640 and MASC 651. Applies student's knowledge of copywriting to larger, more complex advertising projects that encompass more than one media. Emphasizes the fine tuning of a student's creative ability and copywriting skills. Utilizes intensive copywriting projects to show the students' growing ability to develop and present professional quality work.

### **MASC 649 Strategic Insight Development**

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. This course is organized like the planning department of an advertising agency. Students will be introduced to the development of strategic insights for clients through the creation and presentation of briefing documents. Students will learn the role planning plays in advertising production, especially in the development of creative work. Relationship management skills also will be nurtured as students work for the first time with art directors and copywriters. Consumer segments will be explored through several other avenues of inquiry.

### **MASC 650 Perspectives in Advertising**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on trends in effective advertising programs throughout the twentieth century and addresses future developments that will affect the advertising business. Explores varying approaches to communication and allows students the opportunity to enhance organizational, writing, and research skills through presentations and reports.

### **MASC 651 Creative Thinking for Advertising**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on developing the creative skills necessary for solving advertising communication problems. Enables students to maximize and strengthen creative abilities through lecture, brainstorming sessions, and team-oriented strategy sessions focusing on real case projects.

### **MASC 652 Advertising Concept Development**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 651, MASC 641 for copywriting majors; MASC 651, MASC 630 for art direction majors. Develops students' ability to create visually effective work that targets specific groups of consumers, through ongoing review and discussion sessions designed to pinpoint strategies and create relevant visually oriented ideas quickly. Emphasizes a teamwork approach to art direction and concept development.

### **MASC 653 Advertising Advanced Concept Development**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 652, MASC 641 for copywriting majors; MASC 652, MASC 631 for art direction majors. Focuses student toward creative solutions to communication problems. Addresses specific strategies including briefs and concept work that require extensive copy. Emphasizes a team approach to copywriting and art direction.

### **MASC 654 Advertising Radio and Television Development**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Explores different styles and techniques used in creative radio and television advertising. Focuses on

a wide range of broadcast styles including classic radio program work. Addresses headline and body copy issues through presentation of students' work and research on major copywriters and their work.

#### **MASC 655 Nontraditional Advertising Campaigns**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MASC 652 for copywriting and art direction majors; MASC 649 for strategy majors. Restricted to Adcenter students only. Involves application of all the skills and concepts learned in the three disciplines of art direction, copywriting and account planning. Provides for experience in the creation of strategies and creative work that extends through multiple media. Special consideration will be given to nontraditional methods of communicating with consumers.

#### **MASC 656 Advanced Strategic Insight Development**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MASC 649. Restricted to Adcenter students only. This course is a continuation of MASC 649. Students will delve more deeply into the development of strategic insights for clients and enhance their knowledge of the role planning plays in advertising creation. Consumer segments will be explored through several avenues of inquiry. Students also will conduct a major study in branding that will conclude with an analysis and presentation to a panel of experts from the advertising industry.

#### **MASC 657 Broadcast Development and Production**

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: MASC 653. Restricted to Adcenter students only. This course is an overview of conceptual and theoretical techniques used in the development of advertising for television. It will introduce digital television production techniques, including pre-production, shooting, lighting, editing, audio and post-production. Students will learn to use Canon digital video cameras (DVcam format) and edit raw footage on Apple G4 computers using Final Cut Pro software. Discussion will cover lighting techniques, editing principles, digital audio digitizing, mixing and stock sources, and graphics preparation with Adobe Photoshop.

#### **MASC 658 Account Leadership**

Semester course; 2 lecture hours. 2 credits.  
Prerequisite: MASC 656. Restricted to Adcenter students only. Students will learn first-hand general leadership skills crucial to developing successful relationships with agency personnel and clients. Emphasis will be given to exploring ways students can contribute to accounts not only strategically but creatively as well. Students will learn presentation and communication skills as well as effective ways to manage accounts. Students will sharpen previously prepared strategies as well as interviewing skills.

#### **MASC 660 Advertising Account Research and Planning**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 650 and MASC 651. Develops student's ability to choose the most effective research methods for determining both the correct target market for a product and specific issues most pertinent to that market, in regards to positioning the product. Research work with consumer groups will demonstrate student's ability to develop thoughtful questions that will deliver valuable insight.

#### **MASC 661 Advertising Media Research and Planning**

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Emphasizes effective use of research information in the areas of media planning, buying and placement. Focuses on new techniques used in the planning and execution of effective media buying. Requires the presentation of media plans and documents that demonstrate the student's ability to both research the information and present it in the most effective manner.

#### **MASC 662 Advertising Research Methods**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 650 and MASC 651. This course serves as an overview to quantitative and qualitative research. Develops students' abilities to choose the most effective research methods for determining both the correct target market for a product and specific issues most pertinent to that market, in regard to positioning the product. Students will learn how to write discussion guides, screeners and conduct focus group research. Other methods of innovative styles of qualitative research will be covered. Research work with consumer groups will demonstrate students' abilities to develop thoughtful questions that will deliver valuable insight.

#### **MASC 691 Topics in Journalism Education**

Semester course; 1-3 credits. May be repeated for 6 total credits. Prerequisite: Permission of instructor and director of graduate studies. Specialized areas of scholastic journalism will be covered, including: contemporary newspaper design, student press law rights and responsibilities, media ethics, desktop publishing, technology in the classroom, legal issues in communications, editorial writing, magazine layout and production, intensive journalistic writing, and advanced feature writing.

#### **MASC 692 Independent Study**

Semester course; 1-3 credits. A maximum of three credits may be submitted toward the master's degree. Prerequisite: Permission of instructor and director of graduate studies.

#### **MASC 693 Practicum in Mass Communications**

Semester course; 1-6 credits. May be repeated for credit. Credits may not be applied toward the graduate degree. Prerequisite: Permission of coordinator of graduate studies. Student participation in planned educational experience under the supervision of mass communications faculty. The practicum may include supervision of writing, editing and broadcast laboratories, participation in faculty research, and assistance with lower-division undergraduate advising. Graded as pass/fail.

#### **MASC 695 Fieldwork/Internship**

Semester course; variable; 1, 2, or 3 credits per semester. Maximum total of three credits toward graduation. Prerequisite: Permission of director of graduate studies. Selected students will receive on-the-job training under the supervision of an instructor and the employer. Internships are available in newspapers, magazines, public relations, advertising, radio, and television.

#### **MASC 696 Ad Portfolio Development for Copywriters and Art Directors**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MASC 640, MASC 641, MASC 652, MASC 653. Continues the development and demon-

stration of conceptual and creative abilities, and insights in a variety of areas sought by agency art directors, copywriters and recruiters. Development of concepts and materials necessary for the creation of mini-books and individual portfolios will be one of the main focal points. Independent projects pursued specifically for portfolio development also will be conducted.

#### **MASC 697 Ad Portfolio Development for Strategists**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MASC 607, MASC 610, MASC 632, MASC 629, MASC 649 and MASC 656. Continues the development and demonstration of critical thinking skills, insights and creative abilities in a variety of areas sought by agency planning directors, management supervisors and recruiters. Development of concepts and materials necessary for the creation of mini-books and individual portfolios will be one of the main focal points. Independent projects pursued specifically for portfolio development also will be conducted.

#### **MASC 698 Portfolio Review**

Semester course; 1 lecture hour. 1 credit. At the end of the first year, students will present a portfolio of their work to faculty. This portfolio will contain a required number of items as well as be of a high enough standard to warrant continuation in the program. Evaluations of work will be provided to student for continued development.

#### **MASC 699 Thesis**

1-3 credits. May be repeated, but a maximum of three credits may be submitted toward the master's degree.

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## **School of World Studies**

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On May 16, 2003, the Board of Visitors of Virginia Commonwealth University approved the creation of the School of World Studies within the College of Humanities and Sciences. The School of World Studies (the World School) is a relatively unique entity within American higher education that builds on the strengths of existing disciplines in the humanities and the social sciences to provide its students with the knowledge, skills and experience necessary for success in an increasingly interdependent, globalized 21st century. The school will stimulate programs with an international focus across the campuses and develop close ties with such programs as African American Studies, Women's Studies, English, History and other units throughout the university. The school includes programs formerly offered by the Department of Foreign Languages, the International Studies Program, the Anthropology Program and the Division of Religious Studies. Although the programs currently encompassed by the school are primarily at the undergraduate level, the new school will actively foster and promote a wide range of endeavors, including the

establishment of interdisciplinary graduate programs. At the current time, the participating programs offer a select number of graduate courses, found at the end of this chapter.

## Department of Biology

Anderson, John, Research Assistant Professor (Center for Environmental Studies)\*  
Ph.D. George Mason University  
Remote sensing, landscape ecology.

Blem, Charles R., Professor and Curator of the Herpetology and Ornithology Collections  
Ph.D. University of Illinois  
Physiological ecology of terrestrial vertebrates, ornithology.

Brown, Bonnie, Associate Professor  
Ph.D. Old Dominion University  
Ecological and aquaculture, genetics, vertebrate and invertebrate aquaculture, biological oceanography.

Buck, Gregory A., Professor (Microbiology and Immunology and Director, Center of the Study of Biological Complexity)\*  
Ph.D. University of Washington  
Genomics, eukaryotic gene expression.

Chinnici, Joseph P., Associate Professor (Human Genetics)\*  
Ph.D. University of Virginia  
Genetics, genetic resistance to toxins.

Conway, Carolyn M., Assistant Professor  
Ph.D. University of Miami  
Cellular, developmental, reproductive biology.

Dawson, Tracey C., Assistant Professor  
Ph.D. University of North Carolina  
Forensic molecular biology.

Eggleston, William B., Associate Professor  
Ph.D. University of Wisconsin-Madison  
*Drosophila* and maze genetics, transposable elements, genetics and molecular biology.

Elhai, Jeffrey, Research Assistant Professor  
Ph.D. State University of New York at Stony Brook  
Cyanobacterial differentiation, gene regulation, genomic analysis.

Fine, Michael L., Professor (Physiology)  
Ph.D. University of Rhode Island  
Neurobiology, animal behavior, marine biology, fish communication.

Fisher, Robert W., Associate Professor  
Ph.D. Syracuse University  
Developmental biology, nitrogen fixation.

Garman, Gregory C., Associate Professor and Director of Center for Environmental Studies  
Ph.D. University of Maine  
Ichthyology.

Huff, Thomas F., Professor (Microbiology and Immunology and Vice Provost for Life Sciences)\*  
Ph.D. University of Louisville  
Molecular immunology.

Kester, Karen M., Assistant Professor  
Ph.D. University of Maryland  
Insect ecology and behavior, insect-plant interactions.

Matthews, Benjamin F., Assistant Professor (Plant Molecular Genetics Laboratory, USDA)\*  
Ph.D. Syracuse University  
Plant biochemistry, tissue culture, molecular biology.

Moncrief, Nancy D., Professor (Virginia Museum of Natural History)\*  
Ph.D. Louisiana State University  
Mammalogy, mammal population biology and genetics.

Pagels, John F., Professor, Director of Graduate Studies and Curator of the Mammal Collection  
Ph.D. Tulane University  
Mammalogy, ecology, distribution of mammals.

Peters, Gerald A., Professor  
Ph.D. University of Michigan  
Plant physiology, biological nitrogen fixation, symbiotic associations.

Plunkett, Gregory M., Associate Professor  
Ph.D. Washington State University  
Plant systematics and evolution.

Porter, Joseph H., Professor (Psychology)\*  
Ph.D. University of Georgia  
Biopsychology animal learning and behavior, behavioral pharmacology.

Ryan, John J., Associate Professor (Microbiology and Immunology)\*  
Ph.D. Virginia Commonwealth University  
Molecular immunology and physiology.

Smock, Leonard A., Professor and Department Chair  
Ph.D. University of North Carolina at Chapel Hill  
Aquatic ecology, aquatic entomology, wetlands ecology.

Stewart, Jennifer K., Associate Professor (Physiology)  
Ph.D. Emory University  
Endocrine physiology.

Taylor, Shirley M., Assistant Professor (Microbiology and Immunology)\*  
Ph.D. University of California  
Cellular and molecular biology.

Tombes, Robert M., Assistant Professor (Biochemistry; Pharmacology and Toxicology)\*  
Ph.D. University of Washington  
Developmental neuroscience.

Turbeville, J. Clint, Assistant Professor  
Ph.D. Clemson University  
Comparative morphology and systematics of invertebrates.

Webb, Stanley R., Associate Professor (Pathology)\*  
Ph.D. Purdue University  
Virology.

Wu, Fang-Sheng, Associate Professor (Microbiology and Immunology)  
Ph.D. Michigan State University  
Plant tissue culture, plant genetic engineering.

Young, Donald R., Professor and Associate Chair  
Ph.D. University of Wyoming  
Coastal plant ecology.

\* Department in parentheses indicates affiliate appointment.

+ Affiliate appointment in parentheses indicates home department.

The Department of Biology offers programs leading to a master of science degree. Areas of specialization include molecular and cellular biology, terrestrial and aquatic ecology, systematics, and physiology and developmental biology.

In addition to the courses offered by the Department of Biology, graduate students may request permission from the Department of Biology to enroll in graduate courses offered at the MCV Campus in the departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics, Human Genetics, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, and Physiology. Visit the department's Web site: <http://www.has.vcu.edu/bio>.

## Admission requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, the following requirements of the Department of Biology represent the minimum acceptable standards for admission:

- bachelor's degree in biological or related science or equivalent
- appropriate college-level background in mathematics, chemistry and physics
- three letters of recommendation pertaining to the student's potential ability as a graduate student in biology
- student's written statement concerning career and research interests
- transcripts of all previous college work
- satisfactory scores on the GRE (general test)

Admission to the Biology Graduate Program is based upon undergraduate performance, satisfactory scores on the GRE and letters of recommendation. Most entering graduate students in the Department of Biology have a 3.0 GPA or above on undergraduate work and a combined score of 1,000 or more on the verbal and quantitative sections of the GRE. Students who do not meet the minimum entrance requirements, but nevertheless wish to pursue an advanced degree in biology, are encouraged to contact the Graduate Committee in Biology to discuss their interests and concerns. Admission on a provisional basis may be possible for students temporarily lacking the necessary requirements for full admission. Deficiencies must be removed by the end of the first year of residence. Courses that are remedial or designed to remove deficiencies will not be accepted toward the ful-

fillment of the course requirements for the master's degree.

## Degree requirements

Master of science degree candidates are required to take a minimum of 30 semester credits, which should include the following specifications:

- nineteen credits must be courses designated exclusively for graduate students
- a minimum of two and a maximum of four credits must be BIOL 690 Biology Seminar
- a minimum of six and a maximum of nine credits must be BIOL 698 Thesis
- at least five lecture or lecture laboratory courses must be taken from at least three different instructors (excluding Thesis, Research Seminar and Independent Study)

All graduate students are required to write a thesis proposal and a formal thesis following a prescribed format. The thesis proposal must be approved by the student's graduate committee and the chair of the department to initiate thesis research. At the earliest possible opportunity, students must take STAT 543 or an equivalent statistics course approved by the chair of the department. Students entering the program with a statistics background equivalent to STAT 543 may petition the chair of the department to have this requirement waived.

A maximum of six semester hour credits from graduate work taken at other institutions may be transferred if they meet approval of the department.

Receipt of a grade of "C" or lower in two courses constitutes automatic dismissal from the graduate program in biology. Courses with a grade of "C" or lower cannot be applied to satisfying the degree requirements.

Each student will be required to pass a final examination which will be primarily a defense of the thesis.

Continuous enrollment in the graduate program is required. Interruption in continuous enrollment for any reason will require that students reapply to the Department of Biology Graduate Committee.

## Graduate minor in biology

The graduate minor in biology requires a minimum of nine semester hours excluding seminar and limited to a maximum of three credits of BIOL 692 Independent Study.

## Graduate courses in biology (BIOL)

**Courses at the 500 level listed in this bulletin are open to qualified seniors and graduate students only.**

### BIOL 502/MICR 502 Microbial Biotechnology

Semester course; 3 lecture hours. 3 credits. Offered: I. Prerequisites: MICR 504 or equivalent, BIOC 503-504 or equivalent. Open to qualified seniors and graduate students only. Discussion of the application of basic principles to the solution of commercial problems. The course will cover the historical principles in biotransformations as related to primary and secondary metabolism, as well as recombinant DNA technology and monoclonal antibodies and products resulting from the application of recombinant DNA technology.

### BIOL 503 Fish Biology

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: BIOL 317 or equivalent. Open to qualified seniors and graduate students only. Classification, behavior, physiology and ecology of fishes. Laboratories will emphasize field collection of fish and identification of specimens.

### BIOL 504 Comparative Animal Physiology

Semester course; 3 lecture and 4 laboratory hours. 4 credits. Prerequisites: BIOL 218 and CHEM 301-302 and CHEZ 301L, 302L. Open to qualified seniors and graduate students only. Comparative physiology of animals with a molecular emphasis.

### BIOL 507 Aquatic Microbiology

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisites: BIOL 303 and 307 or equivalents. Open to qualified seniors and graduate students only. This course will involve a practical approach to the methods used to culture, identify and enumerate specific microorganisms that affect the cycling of elements in aquatic systems and those that affect or indicate water quality.

### BIOL 508 Barrier Island Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 317 or equivalent, or permission of instructor. A study of the physical factors affecting the formation of barrier islands, adaptations of plants and animals for colonization and persistence in these harsh environments, and how coastal ecological processes conform to general ecological theory. Examples and problems pertaining to Virginia and the southeastern United States are emphasized.

### BIOL 510 Conservation Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 and BIOL 317 (or equivalents) or permission of instructor. Open to qualified seniors and graduate students only. Explores the accelerated loss of species due to increasing human population pressure and the biological, social and legal processes involved in conserving biodiversity.

### BIOL 512 Plant Diversity and Evolution

Semester course; 3 lecture and 4 laboratory hours. 4 credits. Prerequisites: BIOL 218 and 310 or equivalents, or permission of instructor. Taxonomy, diversity and evolutionary history of vascular plants (including ferns, gymnosperms and flowering plants). Lecture emphasis on evolutionary relationships; laboratory emphasis on plant recognition and identification, especially of the Virginia

flora, including some field trips to areas of local botanical interest.

### BIOL 514 Stream Ecology

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: BIOL 317. Open to qualified seniors and graduate students only. A study of the ecology of streams and rivers. Laboratory emphasis is on the structure and functioning of aquatic communities in mountain to coastal streams.

### BIOL 516/HGEN 516 Population Genetics

Semester course; 3 lecture hours. 3 credits. Offered: II. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms.

### BIOL 518 Plant Ecology

Semester course; 3 lecture and 2 laboratory hours. One three-day field trip is required. 4 credits. Prerequisite: BIOL 317. Open to qualified seniors and graduate students only. A lecture, field and laboratory course concerned with the development, succession and dynamics of plant communities and their interrelations with climate, soil, biotic and historic factors.

### BIOL 520 Population Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 and BIOL 317 or permission of instructor. Open to qualified seniors and graduate students only. Theoretical and empirical analysis of processes that occur within natural populations, including population genetics, population growth and fluctuation, demography, evolution of life history strategies and interspecific interactions. Quantitative models will be used extensively to explore ecological concepts.

### BIOL 521 Community Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 317 or equivalent. Open to qualified seniors and graduate students only. Theoretical and empirical analysis of the structure and function of natural communities, ecosystems and landscapes.

### BIOL 522 Evolution and Speciation

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 310 or equivalent. Open to qualified seniors and graduate students only. Evolutionary principles, with emphasis on genetic and environmental factors leading to changes in large and small populations of plants and animals, and the mechanisms responsible for speciation.

### BIOL 524 Endocrinology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218 and CHEM 301-302 and CHEZ 301L, 302L or equivalent. Open to qualified seniors and graduate students only. Hormonal control systems at the organ, tissue and cellular level. Although the major emphasis will be on vertebrate endocrine systems, some discussion of invertebrate and plant control systems will be covered.

### BIOL 530/HGEN 501 Human Genetics

Semester course; 3 credits. Offered: I. Prerequisites: BIOL 310 and CHEM 301-302 and CHEZ 301L, 302L or equivalents. Open to qualified seniors and graduate students only. Emphasizes a broad approach, at an advanced level, to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn error of metabolism, neonatal screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis and genetic counseling.

**BIOL 532 Water Pollution Biology**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: BIOL 317 or equivalent and one year of general chemistry. A study of various forms of pollution in aquatic environments, including the basic principles and effects of water pollution on aquatic organisms and ecosystems, ecotoxicology, waterborne pathogens, invasive species, water pollution monitoring and environmental laws.

**BIOL 540 Fundamentals of Molecular Genetics**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: BIOL 310 or consent of instructor. The basic principles and methodologies of molecular biology and genetics are applied to genome organization, replication, expression, regulation, mutation and reorganization. Emphasis will be placed on a broad introduction to and integration of important topics in prokaryotic and eukaryotic systems.

**BIOL 541 Laboratory in Molecular Genetics**

Semester course; 1 lecture and 4 laboratory hours. 2 credits. Pre- or corequisite: BIOL 540 Fundamentals of Molecular Genetics or equivalent. Experiments are designed to apply advanced techniques and concepts of molecular biology and genetics using prokaryotic and eukaryotic systems. Emphasis will be placed on experimental design, integrating results throughout the semester, making use of relevant published literature, scientific writing and providing hands-on experience with advanced equipment and methodologies.

**BIOL 550 Ecological Genetics**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: BIOL 310 and BIOL 317 (or equivalents) or permission of instructor. Open to qualified seniors and graduate students only. Introduces the principles of ecological genetics, especially those with foundations in population and quantitative genetics, and illustrates conceptual difficulties encountered by resource stewards who wish to apply genetic principles. Explores various types of biological technologies employed by conservation geneticists and provides means for students to gain experience in analyzing and interpreting ecological genetic data.

**BIOL 565 Advances in Cell Signaling**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: BIOL 218 or equivalent. Topical course focusing on advances in cellular communication by cytokines, hormones and neurotransmitters. Each semester, the course focuses on a different topic. Past topics have included cancer biology, allergy and asthma, and autoimmunity.

**BIOL 580 Eukaryotic Biotechnology**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: BIOL 310 and BIOZ 310L, or graduate standing in biology or related fields. Open to qualified seniors and graduate students only. Discussion of principles, concepts, techniques, applications and current advances in cellular and molecular biology aspects of biotechnology for animal and plant cells. The course will cover molecular construction of foreign genes; DNA cloning; technologies for DNA, RNA and protein analyses; nonvector and vector-mediated genetic transformation; gene regulation in transgenic cells; cell and tissue culture; cell fusion; and agricultural, medical and other industrial applications.

**BIOL 585 Virology**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: 16 credits in biology; a "C" grade or better in BIOL 218 or equivalent; eight credits in chemistry. Open to qualified seniors and graduate students only. A comprehensive introduction to virology encompassing viruses of vertebrates, invertebrates, plants and bacteria. Topics include physical and chemical characterization, classification, detection, replication, genetics, diseases, immunology, epidemiology and interactions of neuromotor disorders of infants and children. Critically surveys current theory and practice in neuromotor therapeutics for children and adults.

**BIOL 591 Special Topics in Biology**

Semester course; 1-4 credits. An in-depth study of a selected topic in biology. See the Schedule of Classes for specific topic(s) and prerequisites. If several topics are offered, students may elect to take more than one.

**BIOL 606 Quantitative Ecology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 501 and STAT 543 or equivalent. Principles and applications of mathematical ecology at the community level, including experimental design; sampling techniques, assumptions and limitations; and the use of cluster analysis, gradient analysis and ordination to evaluate, summarize and compare large data sets.

**BIOL 626 Physiological Ecology**

Semester course; 4 lecture hours. 4 credits.

Prerequisite: BIOL 317 or equivalent. This course examines the physiological adjustments and adaptations made by organisms in response to their environment.

**BIOL 630 Patterns of Mammalian Reproduction**

Semester course; 3 lecture hours. 3 credits. A comprehensive ecological and evolutionary study of specializations and adaptive radiation in mammalian reproductive anatomy, the reproductive cycle, seasonality of reproduction and factors affecting litter size and developmental state of neonates. Human reproductive biology is included when pertinent.

**BIOL 654/ENVS 654/URSP 654 Environmental Remote Sensing**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

**BIOL 675 Physiology of the Cell**

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: CHEM 301-302, CHEZ 301L, 302L and at least one of the following biology courses: BIOL 302, 303, 311 or their equivalents. Physiological principles of cellular function in bacterial, plant, and animal cells. The lecture topics include gases, electrolytes, radiations, temperature, membrane transport, bioelectricity and cell movements. The laboratory will stress investigative techniques.

**BIOL 690 Biology Seminar**

Semester course; 1 credit. May be repeated for credit. Presentations by faculty and visiting lecturers, and discussions of research and developments in biology and related fields. Graded as "S," "U" or "F."

**BIOL 691 Special Topics in Biology**

Semester course; variable; 1-4 credits. An advanced study of a selected topic in biology. See the Schedule of Classes for specific topic(s) and prerequisites. If several topics are offered, students may elect to take more than one.

**BIOL 692 Independent Study**

Semester course; hours to be arranged. Credits to be arranged. Determination of the amount of credit and permission of instructor, adviser and department chair must be obtained prior to registration for this course. A course designed to provide an opportunity for independent research in any area of biology outside the graduate student thesis area.

**BIOL 693 Current Topics in Biology**

Semester course; 1 lecture hour. 1 credit; may be repeated for credit. Designed to develop skills in preparing and delivering oral presentations in conjunction with an in-depth study of a current topic in biology. Students present talks and lead discussions on the selected topic. Graded as "S," "U" or "F."

**BIOL 698 Thesis**

Semester course; hours to be arranged. Credits to be arranged. Independent research by students in areas of systematics, environmental, developmental, behavioral, cellular and molecular biology, and comparative physiology.

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**Department of Chemistry**


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Chlebowski, Jan F., Professor (Biochemistry and Molecular Biophysics)\*

Ph.D. Case Western Reserve University  
Biosynthesis and regulation of enzyme structure and function.

Crawley, Charlene D., Assistant Professor  
Ph.D. University of Delaware  
Analytical chemistry.

El-Shall, M. Samy, Professor  
Ph.D. Georgetown University  
Physical chemistry.

Farrell, Nicholas P., Professor  
Ph.D. University of Sussex  
Inorganic chemistry.

Fenn, John B., Research Professor  
Ph.D. Yale University  
Mass spectrometry.

Hawkrige, Fred M., Professor and Department Chair (Biochemistry and Molecular Biophysics)\*  
Ph.D. University of Kentucky  
Analytical chemistry.

Hunnicut, Sally S., Associate Professor and Assistant Chair  
Ph.D. University of Cincinnati  
Physical chemistry.

Kuciauskas, Darius, Assistant Professor  
Ph.D. Arizona State University  
Physical chemistry.

Ottenbrite, Raphael M., Professor  
Ph.D. University of Windsor  
Organic chemistry, polymer chemistry.

Ruder, Suzanne M., Associate Professor and Director of Graduate Studies



Ph.D. Washington State University  
Organic chemistry, polymer chemistry.

Rutan, Sarah C., Professor

Ph.D. Washington State University  
Analytical chemistry.

Shillady, Donald D., Professor

Ph.D. University of Virginia  
Physical chemistry, quantum chemistry.

Snedden, Albert T., Professor and Associate Dean,

College of Humanities and Sciences

Ph.D. Brandeis University

Organic chemistry, natural products.

Terner, James, Professor

Ph.D. University of California at Los Angeles

Physical chemistry, biophysics, resonance raman spectroscopy.

Topich, Joseph, Associate Professor

Ph.D. Case Western Reserve University

Chemistry education, inorganic chemistry.

Vallarino, Lidia M., Professor

Ph.D. University of Milano

Inorganic chemistry.

Watton, Stephen P., Assistant Professor

Ph.D. Northwestern University

Inorganic chemistry.

Zhou, Gibing, Assistant Professor

Ph.D. University of Arkansas

Organic chemistry, DNA alkylation chemistry.

\* Department in parentheses indicates affiliate appointment.

+ Affiliate appointment in parentheses indicates home department.

The Department of Chemistry offers programs leading to the master of science and doctor of philosophy degrees. The programs provide opportunities for concentrated study in analytical, inorganic, organic, polymer or physical chemistry, or chemical physics. A plan of study is worked out for each student to ensure a sound basis for research. In keeping with the university's commitment as an urban institution, the department also offers part-time programs leading to these degrees. Refer to the department's Web site for more information: <http://www.has.vcu.edu/che>.

## Admission requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, students are expected to have a bachelor's degree from an accredited college or university with 30 semester credits in chemistry. Admission on a provisional basis is possible for a student temporarily lacking this expected chemistry background. Acceptance is based upon undergraduate

performance, satisfactory scores on the GRE and letters of recommendation.

Graduate students in the Department of Chemistry may receive financial support via teaching or research assistantships or fellowships. Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

## Degree requirements

Entering graduate students are required to take proficiency examinations in analytical, inorganic, organic and physical chemistry. These examinations are at the level of sound undergraduate courses and are offered preceding the start of the school's fall semester, preceding the start of the spring semester and after the end of spring semester. These tests are used to evaluate the student's strengths and weaknesses, and the student's program is planned accordingly.

## M.S. requirements

Students preparing for the master of science degree must demonstrate competency in analytical, inorganic, organic and physical chemistry. New students who do well on the proficiency examinations may, by decision of the chemistry faculty, be considered to have demonstrated the necessary competency. The proficiency examinations may be repeated and must be completed by the end of the second semester of study. The master of science student is expected to earn a minimum of 15 semester credits in six graduate courses in chemistry, not including credit for seminar, and at least 12 semester credits in research. The credit hours must include three of the following core courses (9 credits) selected from the following four areas. The total of all credits must be at least 30.

### Analytical

CHEM 532 Advanced Analytical Chemistry

### Inorganic

CHEM 620 Advanced Inorganic Chemistry I

### Organic

CHEM 504 Advanced Organic Chemistry I

### Physical

CHEM 510 Atomic and Molecular Structure

CHEM 511 Chemical Thermodynamics and Kinetics

Additional graduate courses to be taken will be determined in consultation with the

faculty research adviser and the faculty of the Department of Chemistry. Graduate students may elect to take courses offered on the MCV Campus. Among the courses of interest to chemistry students taught at the MCV Campus are medicinal chemistry, stereochemistry, heterocyclic chemistry, general biochemistry, circuit design and analysis, and molecular modeling. The School of Medicine section of this bulletin should be consulted for other courses.

Students are expected to participate in the department's seminar program each semester and to present at least two formal talks in the seminar program. An acceptable research thesis and a final oral examination on the thesis are required. Full-time students should complete these degree requirements in two to three years.

## Ph.D. requirements

Students seeking the doctor of philosophy degree must demonstrate competency in analytical, inorganic, organic and physical chemistry. Students who do exceptionally well in the proficiency examinations may, by decision of the chemistry faculty, be considered to have demonstrated the necessary competency. The proficiency examinations may be repeated and must be completed by the end of the second semester of study.

Students preparing for the doctor of philosophy degree must have a minimum of 18 credits in eight graduate courses, not including credit for seminar or research. Credits must include three of the core courses (9 credits) selected from the four areas listed above. Other graduate courses to be taken will be determined in consultation with the faculty research adviser and the faculty of the Department of Chemistry. Students are expected to participate in the department's seminar program and present at least two formal talks in the seminar program. In addition to course work and seminar, the doctor of philosophy requires a minimum of 30 credits in CHEM 697 (directed research), and the total of all credits must be at least 60.

The student is required to complete written and oral examinations in his/her major field to become a doctor of philosophy candidate. The oral examination includes the presentation and defense of the proposed dissertation research. The student must conduct a substantial original investigation under the supervision of his/her adviser and must prepare a dissertation reporting the results of the research and analyzing its

significance in relation to existing scientific knowledge. An oral defense of the dissertation will be held. Full-time students should complete the degree requirements in four to five years.

### Ph.D. in chemical physics option

Students entering the chemical physics program must pass proficiency examinations in two areas of chemistry and two areas of physics (mechanics, electricity and magnetism). Students entering with a bachelor's or master's degree in chemistry who have not taken the courses previously may satisfy the physics requirement with an "A" or "B" in PHYS 301, 302 and 376. Students entering with a bachelor's or master's degree in physics who have not taken the courses previously may satisfy the chemistry requirement with an "A" or "B" in two of the three courses, CHEM 301-302, CHEM 406 and CHEM 409.

Students in the chemical physics program are required to complete CHEM 510, CHEM 612, PHYS 576, PHYS 580 and PHYS 641 plus three courses from the following list: CHEM 504, 532, 550, 610, 611, 615, 616, 620; PHYS 550, 571, 573, 661; MATH 517, 518. A minimum of four graduate courses must be in chemistry. All graduate students seeking the Ph.D. degree must complete 30 hours of CHEM 697 (research), as part of fulfilling the requirements for the degree. However, students electing the chemical physics option may substitute 15 credits of PHYS 697 for 15 credits of CHEM 697.

All other requirements are the same as those stated above.

Additional information and a more detailed description of the graduate program may be obtained from the Department of Chemistry.

### Graduate courses in chemistry (CHEM)

#### CHEM 504 Advanced Organic Chemistry I

Semester course; 3 lecture hours. 3 credits. An integrated study of certain free radical and ionic reaction mechanisms with emphasis on electronic effects and stereochemical consequences of these reactions.

#### CHEM 506 Introduction to Spectroscopic Methods in Organic Chemistry

Half semester course; 3 lecture hours. 1.5 credits. Introduction to mass spectrometry, infrared and 1D 1H and 13C NMR spectroscopy, theory and practice in the elucidation of organic structures.

#### CHEM 507 Introduction to Natural Products

Semester course; 3 lecture hours. 3 credits. A study of the biosynthetic origins, isolation, structure elucidation, and uses of naturally occurring organic compounds. Emphasis is placed upon three major classes of compounds, carboaromatics, terpenes, and alkaloids.

#### CHEM 511 Chemical Thermodynamics and Kinetics

Semester course; 3 lecture hours. 3 credits. The concepts and principles of thermodynamics and their application to chemical problems. The rates and mechanisms of chemical reactions including collision and transition state theories.

#### CHEM 532 Advanced Analytical Chemistry

Semester course; 3 lecture hours. 3 credits. Theories and principles of thermodynamics and kinetics relevant to analytical methods, including acid-base, redox, and metal complexation equilibria, nonaqueous systems, kinetics, and an introduction to surface chemistry.

#### CHEM 550 Introduction to Polymer Chemistry

Semester course; 3 lecture hours. 3 credits. A study of macromolecular compounds that includes classifications, methods of preparation, mechanisms, stereochemistry, and applications. Physical characterizations, such as structure and property correlations, kinetics, thermodynamics, and molecular weight determinations are emphasized.

#### CHEM 580 Mechanical Properties of Plastics and Polymers

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing or consent. This course provides a link between the more practical aspects of plastics and the fundamental properties of the polymers from which they are made. Topics covered deal with the structure of polymers with emphasis on relationships with mechanical properties; rubber elasticity; the glass transition and other secondary transitions; time and temperature dependency; yield and fracture; crystallization and morphology; influence of polymer processing on mechanical properties.

#### CHEM 591 Topics in Chemistry

Semester course; variable; 1-6 credits per semester. Maximum total of nine credits for all topics courses. An in-depth study of a selected topic in chemistry. See the Schedule of Classes for specific topic(s) and prerequisites.

#### CHEM 604 Advanced Organic Chemistry II

Semester course; 3 lecture hours. 3 credits. An integrated study of the mechanism and stereochemistry of organic reactions and their application to organic synthesis. Emphasis is placed on addition and condensation reactions, carbanions, carbocations, and other reactive intermediates.

#### CHEM 605 Physical Organic Chemistry

Semester course; 3 lecture hours. 3 credits. The theory and application of physical methods in the study of the behavior of organic compounds. Topics covered include homogeneous kinetics, equilibria, acid-base catalysis, and the quantitative correlation of structure and reactivity as they apply to the understanding of the mechanisms of organic reactions.

#### CHEM 606 Advanced Spectroscopic Methods in Organic Chemistry

Half semester course; 3 lecture hours. 1.5 credits. Prerequisite: CHEM 506 or permission of instructor.

Advanced spectroscopic techniques including 2D, multinuclear and solid state NMR; theory and practice in the education of organic structures.

#### CHEM 607 Organic Synthesis of Natural Products

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 604 or permission of instructor. A study of the criteria for, applications of reactions to, and design of, complex organic syntheses, including functional group protection and control of stereochemistry.

#### CHEM 610 Applied Quantum Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 510. Quantum mechanics applied to chemical problems in UV, IR, and NMR spectroscopy and the electronic structures of atoms and molecules; development of the self-consistent field equations.

#### CHEM 611 Molecular Spectroscopy

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 510. This course teaches the interaction of radiation and molecules; the rotation, vibration, and electronic motion of molecules; molecular spectra and recent developments in laser spectroscopy.

#### CHEM 612 Statistical Thermodynamics

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 510 or PHYS 580. The principles of quantum and classical statistical thermodynamics with application to selected chemical and physical systems.

#### CHEM 615 Chemical Thermodynamics

Semester course; 3 lecture hours. 3 credits. The study of the laws of thermodynamics and their application to pure phases, solutions, and changes in state.

#### CHEM 616 Chemical Kinetics

Semester course; 3 lecture hours. 3 credits. A study of the rates and mechanisms of chemical reactions, reaction rate theory, kinetic theory of gases, and theories of catalysis.

#### CHEM 620 Advanced Inorganic Chemistry I

Semester course; 3 lecture hours. 3 credits. The application of modern physical techniques for the determination of the symmetry, molecular structure, bonding, and reaction mechanisms of inorganic compounds.

#### CHEM 621 Advanced Inorganic Chemistry II

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 620 or permission of instructor. A coordinated study of synthetic methods, stereochemistry, and reaction mechanisms including catalysis of inorganic, organometallic and bioinorganic compounds.

#### CHEM 630 Electroanalytical Chemistry

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 532 or permission of instructor. Presents the theory and application of electroanalytical techniques including cyclic voltammetry, potential step methods, microelectrode voltammetry and spectroelectrochemistry.

#### CHEM 631 Separation Science

Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHEM 532 or permission of instructor. Discusses theories and principles of separation science as applied to chemical problems with emphasis on current techniques, instrumentation, and applications.

**CHEM 632 Chemometrics**

Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHEM 409 or permission of the instructor. Computer methods for experimental design and data analysis of spectroscopic, electrochemical and chromatograph data. Topics include sampling theory, detection limits, curve resolution, Fourier transform-based instruments, and factor analysis.

**CHEM 633 Mass Spectrometry**

Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHEM 532 or permission of the instructor. Topics include mass spectrometry ionization methods, mass analyzers, theory of unimolecular decompositions, and techniques used for ion structure determination.

**CHEM 634 Surface Science**

Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHEM 532 and 633 or permission of the instructor. Topics include types of surfaces requiring surface analysis, electron-surface scattering (AES, UPS, XPS, HREELS, LEED, STM, SEM), photon-surface scattering (IR, NMR, EXAFS), Molecule/Ion-Surface scattering (ISS, RMBS), chemisorption techniques and work function measurements.

**CHEM 635 Spectrochemical Analysis**

Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHEM 532 or permission of instructor. Topics include instrumental components, such as lasers, photomultipliers, array detectors, monochromators, lock-in and boxcar detection, waveguides and optical fibers, atomic spectroscopic methods, fluorescence, Raman and circular dichroism spectroscopies.

**CHEM 690 Research Seminar**

Semester course; 1 credit. May be repeated for credit. In addition to reports presented by students, staff, and visiting lecturers, current problems and developments in chemistry are discussed.

**CHEM 691 Topics in Chemistry**

Semester course; variable; 1-6 credits per semester. Maximum total of nine credits for all topics courses. An advanced study of selected topic(s) in chemistry. See the Schedule of Classes for specific topic(s) and prerequisites.

**CHEM 697 Directed Research**

Semester course; 1-15 credits. May be repeated for credit. Research leading to the M.S. and Ph.D. degree.

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**Department of Criminal Justice**


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Albanese, Jay S., Professor  
Ph.D. Rutgers University  
Organized crime, white collar crime, professional ethics.

Geary, David P., Associate Professor Emeritus  
Ph.D. Marquette University  
Justice policy administration, policing, international justice systems.

Gordon, Jill, Associate Professor  
Ph.D. University of Cincinnati  
Research methods, juvenile justice, corrections.

Gottfredson, Stephen D., Professor and Dean, College of Humanities and Sciences  
Ph.D. Johns Hopkins University  
Criminal justice, crime policy.

Grant, Patricia H., Instructor  
Ph.D. Virginia Commonwealth University  
Race and crime, juvenile justice, corrections.

Hague, James L., Professor and Graduate Director  
J.D. University of Michigan School of Law  
L.L.M. University of Virginia  
Criminal law, criminal procedure, jurisprudence, courts and judicial process.

Hooker, James E., Associate Professor Emeritus  
M.A. Washington State University  
Criminal justice management, law enforcement.

Moriarty, Laura J., Professor and Assistant Dean,  
College of Humanities and Sciences  
Ph.D. Sam Houston State University  
Research methods, victimology, criminology.

Pelfrey, William V., Professor  
Ph.D. Florida State University  
Criminology, crime analysis.

The graduate program in criminal justice is designed to provide advanced educational preparation for students and criminal justice professionals pursuing careers in the field of criminal justice. Such preparation includes understanding the range of theory, research and policy in criminal justice. The curriculum is directed especially toward assisting students in developing the advanced knowledge, skills and abilities required by criminal justice professionals.

The Master of Science in Criminal Justice Program requires 36 semester hours of course work.

The curriculum provides for the group of core courses and approved electives noted on the curriculum outlines that follow.

The Post-baccalaureate Certificate in Criminal Justice Program offers an abbreviated graduate-level course sequence of 15 credit hours for individuals with an academic and/or professional background in criminal justice.

The graduate programs are designed to accommodate both full- and part-time students. Nearly all courses are offered in the evenings after 4 p.m. Internship opportunities are available for students without field experience.

**M.S. in criminal justice**

Students are expected to complete CRJS 501 as one of their first courses. CRJS 550, 601, 616, 620 and 641 also are required, as are five elective courses (15 credits) approved by the graduate director. Students who do not have criminal justice experience are encouraged to complete an approved internship (CRJS 693).

To complete the M.S. curriculum, the student is required to pass a comprehensive examination, CRJS 684.

**Post-baccalaureate certificate in criminal justice**

This certificate program offers specialization for individuals interested or involved in law enforcement, corrections, juvenile justice or the courts. It combines survey and theory courses with research, management and policy courses on the justice system. The courses in the Post-baccalaureate Certificate in Criminal Justice Program are the same as the master's-level courses, and are fully transferable to the Master of Science Program with grades of "B" or better and upon acceptance into the master's degree program.

Five courses are required for the certificate, as specified in the chart that follows. To receive the certificate, the student must achieve a "B" average in the five courses with no more than one "C" grade and complete the 15-hour certificate program within three years.

**Admissions**

Beyond the general School of Graduate Studies standards listed in the Graduate Studies at VCU chapter of this bulletin, admissions will be based on:

**Full admission**

- An undergraduate GPA that exceeds 2.7 overall.
- A satisfactory score on the GRE. Call (800) GRE-CALL for exam information.
- Previous evidence of ability to perform graduate-level work (where applicable).
- Professional experience in criminal justice (where applicable).

**Provisional admission**

- In rare cases, applicants who do not meet the requirements for full admission may be accepted provisionally upon recommendation of the departmental admissions committee. The conditions for earning full admission are stated in the provisional acceptance letter sent by the dean of the School of Graduate Studies. Conditions usually include the requirement that the student complete the first nine hours of departmental graduate courses with a grade of "B" or better in each course.

- Provisional admission does not constitute a waiver of the requirement to submit a GRE test score.

The application deadline for receipt of all materials is April 1 each year for fall admission and Nov. 1 for spring admission.

### Transfer credit

At the time of a student's acceptance into the program, a maximum of six semester hours of appropriate graduate credit may be applied toward a master of science degree in the Department of Criminal Justice. The credits to be transferred must be approved by the department.

### Financial information

Information and application forms for financial aid information may be secured from the VCU Financial Aid Operations Center, 901 W. Franklin St., Room 107, Richmond, VA 23284-3026, (804) 828-6669. There often are part-time research/teaching/advisement positions within the Department of Criminal Justice for graduate students. These are hourly positions, which are posted by the department each semester.

### Requirements for the degree of master of science in criminal justice

In addition to general graduation requirements:

- Students must complete a minimum of 36 graduate semester credits, approved by the chair, with an overall GPA of 3.0 or above.
- Students must successfully complete the comprehensive examination. Students have a maximum of three opportunities to pass the comprehensive examination.
- Students may complete a supervised field placement (CRJS 693) under the direction of the department and the immediate supervision of a qualified person in an approved agency or facility. Applications for all internships must be submitted a semester in advance at department offices.

### Correspondence and information

General program information can be obtained by accessing the department's home page: <http://www.has.vcu.edu/crj>.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

### Master of science in criminal justice – Justice option

Core (7 courses)	credits
CRJS 501 Criminal Justice Assessment	3
CRJS 550 Professional Ethics and Liability	3
CRJS 601 Research Basis of Criminal Justice	3
CRJS 616 Justice Policies and Administration	3
CRJS 620/SOC 620 Seminar in Criminology	3
CRJS 641 Jurisprudence	3
Comprehensive Exam (required of all students)	
CRJS 684 Comprehensive Exam	3
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Note: Students may complete an approved internship (CRJS 693).

Students must successfully complete the comprehensive examination. Students have a maximum of three opportunities to pass the comprehensive examination.

#### Approved electives (5 courses)

Electives must be approved by the adviser.

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### Post-baccalaureate certificate in criminal justice

The five courses required are as follows:	credits
CRJS 501 Criminal Justice Assessment	3
CRJS 601 Research Basis of Criminal Justice	3
Select three from the following courses:	9
CRJS 550 Professional Ethics and Liability	
CRJS 616 Justice Policies and Administration	
CRJS 620/SOCY 620 Seminar in Criminology	
CRJS 641 Jurisprudence	
Graduate elective	
	<hr/> 15

### Graduate courses in criminal justice (CRJS)

#### CRJS 501 Criminal Justice Assessment

Semester course; 3 lecture hours. 3 credits. Survey of the American criminal justice system, and the relationships among crime, law, police, courts, and corrections. Review of contemporary criminal justice literature.

#### CRJS 550 Professional Ethics and Liability

3 credits. The ethical basis for decision making in criminal justice. How ethical considerations affect every important decision in criminal justice, especially as they involve the liberty interests of others. These decisions include: police stop and arrest decisions, prosecutor charging decision, defendant plea decisions,

defense strategy decisions, judicial evidentiary rulings, sentencing decisions, among others. The consequences of unethical decisions on management ability, civil and criminal liability faced by criminal justice professionals.

#### CRJS 571/FRSC 571 Survey of Forensic Science

Semester course; 3 lecture hours. 3 credits. History and current status of forensic science as the intersection of crime, law, biology, and chemistry. Review of specialties within the field, analytical techniques employed, and career opportunities in the field.

#### CRJS 591 Topic Seminar

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of six credits. Periodic seminar in contemporary criminal justice topics. Topics to be determined.

#### CRJS 601 Research Basis of Criminal Justice

Semester course; 3 lecture hours. 3 credits. Examines principles of design, method, and analysis in criminal justice research. Issues of reliability, validity and the applicability of research findings in practice.

#### CRJS 612 Criminal Justice Politics and Planning

Semester course; 3 lecture hours. 3 credits. Assesses political and public policy issues as they relate to the administration of justice planning and policy strategies. Emphasizes planning implications of interagency relationships, the impact of social change in the criminal justice process, and community involvement in the control and prevention of crime.

#### CRJS 616 Justice Policy and Administration

Semester course; 3 lecture hours. 3 credits. Analyzes the legal, philosophical, political, and management influences that shape the criminal justice policy and its administration. Organization and management principles as they apply to the justice system with emphasis on leadership and human resource development.

#### CRJS 620/SOCY 620 Seminar in Criminology

Semester course; 3 lecture hours. 3 credits. Examination and analysis of social, psychological, and economic theories and correlates of criminal behavior. Typologies of offenders.

#### CRJS 622 Comparative Criminal Justice Systems

Semester course; 3 lecture hours. 3 credits. Study of crime, law, and criminal justice from an international perspective, emphasizing their comparative aspects.

#### CRJS 631 Administrative Issues in Criminal Justice

Semester course; 3 lecture hours. 3 credits. Application of organizational theory and administrative behavior to criminal justice policy, management, and operation. Administrative concepts, program planning and development, and innovative management practices.

#### CRJS 641 Jurisprudence

Semester course; 3 lecture hours. 3 credits. Examines the theoretical underpinnings of law and justice. Studies the evolution of theories of jurisprudence within the context of evolving concepts of responsibility and law. Systems of law will be contrasted and emphasis will be placed on contemporary developments in substantive laws.

#### CRJS 660 Seminar in Legal Process

Semester course; 3 lecture hours. 3 credits. Studies the formal and informal procedures of various criminal jus-

tice systems. Advanced study of criminal procedure and the major legal constraints and authorizations placed upon arrest, prosecution, trial, sentencing and appeal.

### CRJS 670/FRSC 670 Forensic Evidence and Criminal Procedure

Semester course; 3 lecture hours. 3 credits. Presents the law of criminal procedure and rules of evidence as applied to forensic science. Explores issues of scientific versus legal burdens of proof, legal terminology, and trial procedure.

### CRJS 680/FRSC 680 Forensic Psychiatry

Semester course; 3 lecture hours. 3 credits. Guilty mind requirements in criminal law. Competency to stand trial, insanity defense, mental disorder and crime. Behavioral profiling of serial murders and sex offenders. Issues in the use of clinical and statistical prediction methods in criminal justice.

### CRJS 684 Comprehensive Exam Writing

Semester course; 3 credits or 1 credit extension. May be taken anytime after completion of the required core courses. Students will write a multquestion comprehensive exam over a period of 10 weeks. Students may be asked to orally explain and respond to questions on the written answers to the comprehensive exam. Graded as pass/fail.

### CRJS 692 Directed Independent Study

Semester course; 1-3 credits. May be repeated for a maximum of six credits. The instructor's review and approval of the study proposal must precede independent work by student. Provides an opportunity for an advanced student to pursue an independent research project or extensive literature review under the supervision of an instructor.

### CRJS 693 Internship

Semester course; 3 credits. Students must apply for this internship a semester in advance. Provides student an opportunity to relate theory to practice through observation and experience in an approved agency. The internship should be taken near the end of the degree program. Graded as pass/fail.

### CRJS 763 Seminar in Social Justice

Semester course; 3 lecture hours. 3 credits. Examines the philosophical and historical underpinnings of the principles of justice and their relationship to equality, liberty, government, and law.

### CRJS 798 Thesis Research

Semester course; 3 credits and 1 credit extension. Prerequisite: CRJS 601; a graduate statistics course is strongly recommended. Permission of graduate instructor. Registration for this course is permitted only upon approval of the candidate's detailed research proposal and statement of qualifications reviewed a semester in advance by a faculty committee. A two-semester project resulting in an advanced research paper that involves a comprehensive literature review, approved research design, and an original analysis or replication study. CRJS 798 involves preparation and oral defense of the thesis prospectus. Graded as "S," "U," or "F."

### CRJS 799 Thesis

Semester course; 1-3 credits. Prerequisite: Completion of CRJS 798. Execution of the research prospectus approved in CRJS 798. The master's thesis will be written according to University guidelines, approved

by the student's faculty committee, and defended orally before the faculty committee. Graded as "S," "U," or "F."

## Department of English

Armour, Robert A., Professor Emeritus  
Ph.D. University of Georgia  
Film.

Bassard, Katherine C., Associate Professor  
Ph.D. Rutgers University  
African-American literature.

Berry, Boyd M., Associate Professor  
Ph.D. University of Michigan  
Renaissance, Milton.

Browder, Laura, Associate Professor  
Ph.D. Brandeis University  
Drama, creative writing, American studies.

Coppedge, Walter R., Professor  
Ph.D. Indiana University  
Shakespeare, English Renaissance drama, film.

Cooper, Elizabeth, Associate Professor  
Ph.D. University of North Carolina  
Composition and rhetoric, linguistics.

Cornis-Pope, Marcel, Professor and Department Chair  
Ph.D. University of Timisoara (Romania)  
Literary theory, modern American literature, British Victorian and 20th-century literature.

Dance, Daryl C., Professor Emerita  
Ph.D. University of Virginia  
American literature, folklore.

DeHaven, Tom, Professor  
M.F.A. Bowling Green State University  
Creative writing, fiction, American studies.

Donovan, Gregory E., Associate Professor  
Ph.D. State University of New York at Binghamton  
20th-century American and British literature, creative writing.

Duke, Elizabeth F., Associate Professor Emerita  
Ph.D. University of Iowa  
Linguistics.

Duke, Maurice, Professor Emeritus  
Ph.D. University of Iowa  
American literature, editing, professional writing.

Fine, Richard A., Professor  
Ph.D. University of Pennsylvania  
American studies, American literature.

Frankel, Nicholas, Assistant Professor  
Ph.D. University of Virginia  
19th-century British literature, film.

Griffin, Claudius W., Professor Emeritus  
Ph.D. Indiana University  
Teaching composition, Shakespeare.

Harkness, Marguerite, Associate Professor  
Ph.D. State University of New York at Binghamton  
19th-century and 20th-century British literature.

Hodges, Elizabeth, Associate Professor  
Ph.D. University of Pennsylvania  
Rhetoric and composition.

Ingrassia, Catherine, Associate Professor  
Ph.D. University of Texas at Austin  
18th-century British literature.

Kinney, James J., Professor  
Ph.D. University of Tennessee  
Rhetoric and composition, American literature.

Kuhn, Elisabeth, Associate Professor  
Ph.D. University of California, Berkeley  
Linguistics.

Laban, Lawrence F., Assistant Professor  
Ph.D. Indiana University  
British prose fiction.

Latané, David E., Associate Professor  
Ph.D. Duke University  
19th-century British literature.

Longest, George C., Associate Professor Emeritus  
Ph.D. University of Georgia  
Southern literature, realism.

Mangum, A. Bryant, Professor  
Ph.D. University of South Carolina  
Early 20th-century American literature.

Marshall, Paule, Professor Emerita  
B.A. Brooklyn College  
Creative writing.

Morse, Charlotte C., Professor  
Ph.D. Stanford University  
Middle English literature, Medieval studies.

Oggel, L. Terry, Professor,  
Ph.D. University of Wisconsin – Madison  
19th-century American literature and theater, bibliography.

Pendleton, James D., Professor Emeritus  
M.A. University of North Carolina  
Playwriting.

Perry, Patricia H., Associate Professor  
Ph.D. State University of New York at Stony Brook  
Composition and rhetoric.

Priebe, Richard K., Professor  
Ph.D. University of Texas at Austin  
African literature, folklore.

Reynolds, Elizabeth R., Professor Emerita  
Ph.D. University of South Carolina  
Medieval studies.

Sange, Gary R., Associate Professor  
M.F.A. University of Iowa  
Poetry writing, modern poetry.

Sharp, Nicholas A., Assistant Professor and Associate Chair  
Ph.D. Ohio State University  
Renaissance.

Tester, William, Associate Professor  
M.F.A. Syracuse University  
Contemporary literature, creative writing.

Winston, Janet M., Assistant Professor  
Ph.D. University of Iowa  
Women's literature, women's studies.

Wojahn, David C., Professor  
M.F.A. University of Arizona  
Creative writing (poetry).

Woodlief, Ann M., Associate Professor Emerita  
Ph.D. University of North Carolina  
American literature.

The Department of English offers the master of arts in English and the master of fine arts in creative writing.

Visit the department's Web site at <http://www.has.vcu.edu/eng>.

## Master of Arts in English

The Department of English offers a program leading to a master of arts in English with two areas of emphasis or concentration.

The program provides maximum flexibility by allowing each student, in consultation with the student's graduate committee, to select the concentration that will best develop the student's competence in those areas most relevant to scholarly and professional objectives.

Programs leading to the master of arts in English are:

- **Writing and rhetoric.** Designed for the candidate who is seeking intensive work in both writing and teaching expository prose or for the candidate who plans to pursue the doctor of philosophy degree.
- **Literature.** Designed for the candidate who desires intensive work in English or American literature beyond the bachelor's level or for the candidate who plans to pursue the doctor of philosophy degree.

## Admission requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, the following requirements, established by the English Graduate Studies Committee, represent the minimum acceptable standards for admission:

- a baccalaureate degree in an area appropriate to the study of literature or writing,
- a GPA that indicates the applicant can pursue successfully a graduate degree,
- three letters of recommendation from former instructors, and
- completion of the GRE. (Applicants for the literature track may, but are not required to, submit scores for the GRE subject test in literature.)

## Degree requirements

The English program consists of a minimum of 30 semester credits. After these credits have been attained, students shall be examined over their courses and research as the Graduate Committee recommends. Students also may wish to present a thesis

or project, credit for which shall be determined by the Master of Arts Committee.

## Master of Fine Arts in Creative Writing

Browder, Laura, Associate Professor and Director  
Ph.D. Brandeis University

Drama, creative writing, American studies.

DeHaven, Tom, Professor

M.F.A. Bowling Green State University

Creative writing (fiction, screenwriting), American studies.

Donovan, Gregory E., Associate Professor

Ph.D. State University of New York at Binghamton

Creative writing (poetry), 20th-century American and British literature.

Marshall, Paule, Professor Emerita

B.A. Brooklyn College

Creative writing (fiction).

Pendleton, James D., Professor Emeritus

M.A. University of North Carolina

Creative writing (playwriting).

Sange, Gary R., Associate Professor

M.F.A. University of Iowa

Creative writing (poetry).

Tester, William, Associate Professor

M.F.A. Syracuse University

Contemporary literature, creative writing.

Wojahn, David C., Professor

M.F.A. University of Arizona

Creative writing (poetry).

The master of fine arts in creative writing is designed to attract students from diverse undergraduate backgrounds who are writers of promise. The program is suited particularly to those interested primarily in the writing of fiction and poetry; however, some emphasis also is placed on the writing of nonfiction, playwriting and screenwriting.

Graduate students in creative writing are encouraged to develop a strong personal sense of aesthetics and ethics and to pursue excellence in writing and scholarship, as well as in teaching, if they are pursuing that career option. Through the workshop experience, as well as personal conferences with the writing faculty, the program aims to help students significantly advance the quality of their writing, to enable them to become expert critics of their own and others' work, and to advise them as they seek to publish their writing.

## Admission requirements

Admission to the Master of Fine Arts Program is based most importantly on the candidate's submitted creative writing portfolio (thus students who have produced little or no creative writing prior to their

application would not be eligible). The deadline for application to the Master of Fine Arts Program is Feb. 1. In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, the following requirements, established by the Creative Writing Master of Fine Arts Committee, represent the minimum acceptable standards for admission:

- A portfolio of promising fiction or poetry, possibly with drama (as a minimum, approximately eight to 10 poems, or 20 or more pages of fiction, or one act from a play, or some combination of these; in all cases, applicants should submit only their strongest creative writing samples) to be submitted to the M.F.A. program director.
- Three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate school, especially in a creative writing program.
- A scholastic record that is indicative of the applicant's ability to pursue a graduate degree successfully.
- A baccalaureate degree or its equivalent.
- Completion of the GRE (the subject test in literature is not required for M.F.A. applicants).

## Degree requirements

A total of 48 semester hours is required to complete the degree. The basic course of study required in the program includes: 12 semester hours of graduate creative writing workshops (required), 12 hours of graduate literature courses (required), and six to 12 hours of thesis work (required); the remaining 12 to 18 hours are electives, taken in literature, workshops or other graduate courses. Beyond the required courses, the student is free to work out a total program of 48 hours, with the advice of the program director or the student's thesis adviser, which is appropriate to the individual student's aims and interests. The thesis work gives students the opportunity to produce a manuscript of publishable quality. Course work also is available in the techniques of teaching creative writing, and the program is flexible enough to include studies undertaken in other departments of the university as well, including Art History, Theatre, Philosophy and the School of Mass Communications.

## Graduate courses in English (ENGL)

### ENGL 500 Practicum in College English

Semester course; 1-6 credits. May be repeated for credit. May not be applied toward degrees in English. Prerequisite: Permission of director of graduate studies. Student participation in planned educational experience under the supervision of English department faculty. The practicum may include classroom teaching, Writing Center tutoring, or participation in research projects.

### ENGL 501 Introduction to Graduate Studies in English

Semester course; 1 lecture hour. 1 credit. An introduction to the theoretical and practical aspects of advanced English studies. Required of all new graduate students seeking the M.A. in English.

### ENGL 528/TEDU 528 Children's Literature II

Semester course; 3 lecture hours. 3 credits. May not be taken for credit toward undergraduate English major if student has taken ENG/EDU 351. May not be used to fulfill Literature requirement for M.A. in English or M.F.A. in creative writing, but may be taken as elective credit. A study of classic and current children's books from a variety of literary genre. Magazines and media-related reference resources and journals are reviewed. The creative use of literature, its sociocultural functions, and its contribution to the development of the oral and written expression of children from nursery to grade eight are explored. A focus on children with special problems is included.

### ENGL 530 Introduction to Scholarship in English Studies

Semester course; 3 lecture hours. 3 credits. Introduces the practice of research and scholarly discourse in English studies. Emphasizes scholarly resources (printed and electronic) and textual studies.

### ENGL 531 Literary Criticism

Semester course; 3 lecture hours. 3 credits. A study of the fundamental concepts involved in the practice of criticism. Some attention is given to the historical development of criticism, but the primary focus is on its methods and aims.

### ENGL 532/ENED 532 Applied English Linguistics

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: ENGL 449 or equivalent course in linguistics or permission of instructor. Application of linguistics theories and methods to selected teaching problems, such as teaching English grammar and usage, teaching English as a second or foreign language, or teaching standard English to students who speak different dialects.

### ENGL 552/TEDU 552/LING 552 Teaching English as a Second Language

Semester course; 3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with a variety of instructional/learning strategies. Presents and explores current approaches and methodology, as these relate to linguistic features and pedagogy.

### ENGL 553 Studies in Linguistics

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: ENGL 449 or equivalent course in linguistics or permission of instructor. A general introduction to one area of linguistic study, such as

pronunciation, grammar, stylistics, dialects, usage standards, lexicography, onomastics, or semantics.

### ENGL 561 Medieval Literature

Semester course; 3 lecture hours. 3 credits. A survey of major works of British literature in the Middle Ages with some attention to continental influences upon both Old English and Middle English works. The study will include poetry, prose, and drama from Beowulf to Morte d'Arthur. Some reading in modern English translation, some in Middle English.

### ENGL 563 Renaissance Literature

Semester course; 3 lecture hours. 3 credits. A survey of British poetry, prose, and drama written in the 16th and 17th centuries. Attention will be divided among major figures - such as More, Marlowe, Spenser, Shakespeare, Donne, Johnson, Milton, and minor authors.

### ENGL 565 Restoration and 18th-century Literature

Semester course; 3 lecture hours. 3 credits. A survey of Restoration and 18th-century poetry, drama, fiction, and prose. Readings in major figures of the period including Behn, Dryden, Etherege, Congreve, Steele, Defoe, Swift, Pope, Montagu, Richardson, Fielding, Johnson, Sheridan and Austen.

### ENGL 567 Romantic and Victorian British Literature

Semester course; 3 lecture hours. 3 credits. A survey of British literature during the 19th-century. Readings in the major writers, especially poets and novelists such as Wordsworth, Shelley, Dickens, the Brownings, the Brontes, Eliot and Hardy.

### ENGL 569 20th-century British Literature

Semester course; 3 lecture hours. 3 credits. A survey of the literature of 20th-century Britain and Ireland. Major figures of the early part of the century such as Conrad, Lawrence, Woolf, Joyce, Yeats, Shaw, Auden will be complemented by the emerging writers of the second half of the century.

### ENGL 571 American Literature I

Semester course; 3 lecture hours. 3 credits. A survey of the literature of the United States from the Puritan period through the Romantic period.

### ENGL 572 American Literature II

Semester course; 3 lecture hours. 3 credits. A survey of the literature of the United States from the Age of Realism through the Contemporary period.

### ENGL 601/ENED 601 Young Adult Literature

Semester course; 3 lecture hours. 3 credits. Examination of literature written for young adults, literature appropriate for young people in middle schools and high schools. Focuses on the content, characteristics, and teaching of such literature.

### ENGL 611 The Writer in His Own Time

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the biographical, intellectual, and sociological influences on a selected British or American writer and his work. The course is designed to discover how the external factors of a writer's life are absorbed and transmuted into art by drawing upon the resources of other disciplines when relevant.

### ENGL 614 Major Works of Literature

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the aesthetic back-

grounds, composition, and continuing interpretation of a selected work of English or American literature generally regarded as a classic. The intent of the course is to comprehend as fully as possible the literary work of art through studying the aesthetic influences upon it and by applying various critical approaches to it.

### ENGL 617 Major Literary Modes

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study, through the analysis of selected literary works of several genres, of modes that are useful to understand and judge literature. The study may draw upon the literature of many nations in English translation. The following modes are examples of those that may be studied: the heroic mode, the tragic mode, the comic mode, the ironic mode.

### ENGL 620 Patterns in Literary Thought

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of significant recurring intellectual attitudes and concepts that have found expression in literature and shaped the development of literary style and thought. The study will draw upon the literature of many nations in English translation.

### ENGL 624 Literature in Society

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the ways in which literature often reflects, supports, and influences political and philosophical movements in society. Creative literature, primarily English and American, will be studied in terms of its response to or effect upon social issues.

### ENGL 627 Literary Genre

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of a literary genre, such as poetry, fiction, or drama.

### ENGL 636/ENED 636 Teaching Writing

Semester course; 3 lecture hours. 3 credits. Examines theories and practices of teaching writing, with emphasis on the connections between theory and practice.

### ENGL 637 Theories of Rhetoric and Composition

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 636 A study of theory and scholarship in rhetoric and writing.

### ENGL 643/ENED 643 Teaching Basic Writing Skills

Semester course; 3 lecture hours. 3 credits. Emphasis on developing the student's ability to teach fundamental writing skills, including such topics as diagnosis of writing problems, strategies for correcting problems, and methods for evaluating progress.

### ENGL 651 Topics in Teaching Composition

Semester course; 1-3 lecture hours. 1-3 credits. A course for the examination of a specialized issue, topic, or problem in teaching composition.

### ENGL 652 Studies in Writing and Rhetoric: \_\_\_\_\_

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of an area or specialized issue in rhetoric and/or writing such as the history of rhetoric, theories of invention, qualitative research methods in writing, or studies in style.

### ENGL 661 Themes in Interdisciplinary Studies

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study in depth of a theme, topic, or concept involving two or more disciplines.

**ENGL 666 Creative Writing: Fiction**

Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in M.F.A. program or permission of the Creative Writing Committee. All students seeking to enroll must contact the creative writing M.F.A. director. Study of the art of fiction writing, with the goal of producing professionally acceptable and publishable fiction. Workshop members shall produce a substantial amount of writing, short stories or a portion of a novel, and in addition shall be able to evaluate and articulate the strengths of their own work. Graded as pass/fail.

**ENGL 667 Creating Writing: Poetry**

Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in M.F.A. program or permission of the Creative Writing Committee. All students seeking to enroll must contact the creative writing M.F.A. director. Study of the art of poetry writing, with the goal of producing professionally acceptable and publishable poetry. Workshop members shall produce a substantial amount of poetry and in addition shall be able to evaluate and articulate the strengths of their own work. Graded as pass/fail.

**ENGL 668 Creative Writing: Drama**

Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in M.F.A. program or permission of the Creative Writing Committee. All students seeking to enroll must contact the creative writing M.F.A. director. Study of the art of playwriting with the goal of creating plays that are suitable for production. Workshop members shall produce a substantial volume of writing, one-act plays, or a portion of a longer play, and, in addition, shall be able to evaluate and articulate the strengths of their own work. Graded as pass/fail.

**ENGL 670 Literary Editing and Publishing**

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A course in which the student learns to edit fiction, poetry, drama, or nonfiction. Genre covered will vary from semester to semester. Attention will be paid to the ways in which editors work with writers in all the technical aspects of editing, revising, and publishing. Ethical responsibilities of editors to authors and their texts will be stressed. Questions considering the publishing world at large will be considered.

**ENGL 671 Film and Television Scripts**

Semester course; 3 lecture hours. 3 credits. Study of the theory and practice of producing shooting scripts for television and motion pictures. Emphasis will be placed on the various kinds of scripts most commonly used by directors and cinematographers (e.g., silent, narrated, and dramatized). Attention will also be paid to the ways in which script writers adapt material to audiences, and the ways in which strict time frames are imposed on scripts. Students will write scripts of various kinds and lengths.

**ENGL 672 Writing Nonfiction**

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Study and practice of writing one or more modes of nonfiction on the professional or preprofessional level, under critical supervision. Emphasis will be placed on such matters as organization, style, revision, and adaptation to particular audiences and publications. Possible kinds of writing could include reports; writing based on statistics; writing textbooks; writing separate

chapters of books, and writing reviews, criticism, and advocacy materials.

**ENGL 673 Teaching Creative Writing**

Semester course; 3 lecture hours. 3 credits. The course is intended for those who teach or plan to teach creative writing. A comparative analysis of different approaches to the teaching of creative writing. Attention will be paid to the different ways in which elements such as dialogue, sound pattern, scene development, line break, meter, voice, and distance can be taught.

**ENGL 692 Independent Study**

1-3 hours. Variable credit. Maximum of six credits. Prerequisite: Permission from department chair. For students in English/English education to pursue, in depth, a particular problem or topic about which an interest or talent has been demonstrated.

**ENGL 694 Internship in Writing**

Semester course; 1 lecture and 6 practicum hours. 3 credits. Permission of director of M.A. program required. Analyses and practices of professional writing in settings such as business, government and industry.

**ENGL 798-799 Thesis**

Continuous course; hours to be arranged. Credits to be arranged; 1-3 credits per course. Preparation of a thesis or project based on independent research or study and supervised by a graduate adviser.

**Selected undergraduate courses**

**After consultation with the student's adviser, a graduate student may take an undergraduate course listed below if the student has not previously taken a course covering the subject matter. No more than two 400-level courses from this list may be used toward the graduate degree. Consult the Undergraduate Bulletin for course descriptions.**

ENGL 400 Shakespeare: The Early Works  
ENGL 401 Shakespeare: The Later Works  
ENGL 402 Chaucer  
ENGL 403 Milton  
ENGL 449/LING 449/ANTH 449 Introduction to Linguistics  
ENGL 450/LING 450 Modern Grammar  
ENGL 451/LING 451 History of the English Language

**Interdisciplinary Track in Environmental Studies**

(Pending approval of a stand-alone M.S. degree program by the State Council of Higher Education for Virginia)

The Center for Environmental Studies was created in 1993 as a focus for the growing number of multidisciplinary environmental initiatives at VCU. The center's objectives complement the broader university mission of teaching, research and community outreach, and provide the commonwealth with a unique academic resource. The interdisciplinary graduate program in

environmental studies is administered by the School of Graduate Studies and the Center for Environmental Studies.

**Program description**

The Center for Environmental Studies offers students the opportunity for advanced, graduate-level training in Environmental Studies for full-time and part-time students. The program offers studies in environmental planning, environmental science, environmental health and environmental technology. The unique curriculum is designed to provide graduates with the ability to communicate effectively across traditional discipline boundaries, while fully developing specific areas of expertise. Graduates of the center's academic programs hold positions as environmental professionals in government and in the nonprofit and private sectors.

As part of the requirements of the Master of Interdisciplinary Studies, students must successfully complete the following requirements:

Three credits of ENVS 590 or ENVS 591  
ENVS 601 Survey in Environmental Studies  
ENVS 603 Environmental Research Methods  
One statistics course (500-level or above)  
Three to six credits of ENVS 692, ENVS 697 or ENVS 698 to satisfy thesis/project requirements of the master of interdisciplinary studies

**Admission requirements**

Applicants should have successfully completed undergraduate training and hold a baccalaureate degree. Admissions to the program are drawn generally from applicants with an undergraduate GPA above 2.8 (on a 4.0 scale or equivalent) satisfactory scores on a current (less than five years old) standardized graduate admissions test deemed appropriate by the Center for Environmental Studies. Applicants holding an undergraduate degree from recognized foreign institutions should display an acceptable level of English proficiency by achieving a score of 600 or above on the TOEFL examination.

**To apply**

Applicants for admission to the program must complete forms provided by the School of Graduate Studies and indicate Master of Interdisciplinary Studies — Environmental Studies as the curriculum. Application forms and instructions for applying to all graduate programs are avail-



able on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>. A limited number of merit-based university graduate fellowships and assistantships are available to applicants on a competitive basis. Inquiries regarding funding should be addressed to the Center for Environmental Studies, Virginia Commonwealth University, P.O. Box 843050, Richmond, VA 23284-3050. For more information about the Center for Environmental Studies, browse the center's Web site: <http://www.vcu.edu/cesweb>.

## Graduate courses in environmental studies (ENVS)

### ENVS 521/URSP 521/GEOG 521 Introduction to Geographic Information Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

### ENVS 550 Ecological Risk Assessment

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in ecology, statistics, geology, chemistry or permission of instructor. Ecological risk assessment provides an introduction to the concepts and practice of risk assessment as applied to ecological applications, focusing on the United States. The course will examine the history of risk assessment in U.S. environmental regulation and policy, development and practice of ecological risk assessment and application to regional issues. All students will conduct a risk assessment for a regional case study.

### ENVS 590 Research Seminar in Environmental Studies

An interdisciplinary examination of problems and issues related to environmental studies.

### ENVS 591 Topics in Environmental Studies

Variable credit, 1-3 credits per semester; may be repeated with different topics for a maximum of six credits. An in-depth study of a selected environmental topic. Prerequisites vary by topic; see the Schedule of Classes for specific prerequisites.

### ENVS 601 Survey in Environmental Studies

Provides a foundational understanding of issues central to environmental studies. Lectures will address the theoretical and scientific basis for a variety of pertinent issues, including: and water quality and quantity, pollution prevention, environmental law and policy, population growth, global climate change, conservation, and human and ecological health.

### ENVS 602 Environmental Technology

This course gives students the opportunity to develop skills not available in the traditional academic setting. Students take two to four workshops offered by the Center for Environmental Studies in its Environmental

Technology Training Workshop series. Students will complete an additional project related to each workshop or series of workshops for evaluation purposes.

### ENVS 603 Environmental Research Methods

Provides students with an understanding of statistical and research methods as they apply to environmental research. Students will complete projects on available data sets. This course emphasizes the application of current data analysis methodologies, including the graphical display of summary data, statistical modeling and prediction, and Geographic Information Systems (GIS).

### ENVS 628/PADM 628 Environmental Policy and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. This course explores the relationship between environmental policy and its implementation within a democratic political system. It includes an investigation of basic concepts that underlie environmental policy and the difficulties encountered when attempting to apply them in a real-world setting. It also surveys a variety of tools and methodologies that may be useful in attempting to develop and implement environmental policy.

### ENVS 650 Pesticides, Health and the Environment

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in toxicology, chemistry or permission of instructor. This course is a balanced overview of the benefits and adverse effects of pesticides in the environment and as related to human health. The class provides an interdisciplinary study of pesticide use, fate, exposure, transport and effects.

### ENVS 654/URSP 654/BIOL 654 Environmental Remote Sensing

Semester course; 3 lecture hours. 3 credits. Prerequisites: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

### ENVS 655 Hydrogeology

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENVS 355 or equivalent, or permission of instructor. Focuses on the fundamental concepts of groundwater flow and contaminant transport with an emphasis toward environmental issues such as waste disposal, surface water hydrology, groundwater hydrology and wells, environmental impacts and hydrogeological systems. Allows students to understand and interpret the basic environmental hydrogeologic characteristics of a site and to use that knowledge to provide an informed opinion on protection and remediation.

### ENVS 660 Virginia Environmental Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENVS/PADM 628 or permission of instructor. An overview of relevant Virginia environmental law and regulations in the fields of environmental planning, management and policy. Provides students with working knowledge of documentation necessary for compliance with state environmental programs.

### ENVS 670 Pollution Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in: ecology, toxicology or

animal physiology; or permission of instructor. Courses provides an in-depth presentation of the physiology of animals in polluted habitats and examines the responses of aquatic organisms exposed to pollutants and other environmental stressors, including: thermal and salinity changes, anoxia and hypoxia, hypercapnia, chemical contamination, sedimentation and microbial contamination. The course takes a comparative approach and focuses on non-human systems. Both laboratory and field experiences are provided.

### ENVS 691 Topics in Environmental Studies

Provides an in-depth study of a selected environmental topic.

### ENVS 692 Independent Study

Variable credit, 1-3 credits per semester; may be repeated with different topics for a maximum of six credits. An in-depth study of a selected environmental topic.

### ENVS 693 Internship in Environmental Studies

Each credit hour represents 60 clock hours of work. Provides students with a workplace experience in a public or private agency related to Environmental Studies.

### ENVS 697 Research

Planning, preparation, completion, and presentation of research in environmental studies.

### ENVS 698 Thesis

Planning, preparation, completion, and presentation of research in environmental studies.

## Additional environmental studies courses

### Environmental policy

URSP 621/GEOG 621 Introduction to Geographic Information Systems  
URSP 626 GIS Applications for Planners  
URSP 628 Land Use Planning  
URSP 635 Legal and Legislative Foundations of Planning  
URSP 650 Environmental Planning  
URSP 652 Environmental Analysis  
MATH 639 Studies in Operations Research  
RECR 601 Foundations of Recreation  
PADM 601 Principles of Public Administration

### Environmental science

BIOL 502 Microbial Biotechnology  
BIOL 503 Fish Biology  
BIOL 510 Conservation Biology  
BIOL 514 Stream Ecology  
BIOL 518 Plant Ecology  
BIOL 522 Evolution and Speciation  
BIOL 591 Special Topics in Biology  
BIOL 606 Quantitative Ecology  
BIOL 626 Physiological Ecology  
BIOL 691 Special Topics in Biology  
CHEM 504 Advanced Organic Chemistry I  
CHEM 507 Introduction to Natural Products  
CHEM 532 Advanced Analytical Chemistry

### Environmental health

PMCH 511 Basic Industrial Hygiene I  
PMCH 512 Basic Industrial Hygiene II  
PMCH 571/NURS 571 Principles of Epidemiology  
PMCH 600 Introduction to Public Health  
PMCH 617 International Health  
PHTX 535 Introduction to Toxicology

## Post-baccalaureate Certificate in Environmental Studies

The environmental studies certificate is for students who already hold a bachelor's degree in another field and wish to pursue studies in the environmental field. The certificate can help prepare students for work in such fields as industrial pollution control, municipal water treatment, environmental planning and analysis, biological monitoring, and science writing and reporting.

The Post-baccalaureate Certificate in Environmental Studies requires 36 credits, which includes four environmental courses and two statistics courses. Electives to complete the certificate may be selected from courses in environmental studies and from courses in related departments. Consult the environmental studies program coordinator or adviser for course approvals. At least one course must be taken from the natural sciences, and one from the social sciences. Of the 36 credits, 24 credits must be at the 300 level or above. A maximum of 11 of the environmental studies-related credits and all six of the statistics credits may be transferred from course work completed before or after receiving the bachelor's degree. At least 18 approved credits must be taken at VCU.

Post-baccalaureate certificate students must apply for admission using an undergraduate admission form. Normally, a GPA of 2.7 or better is required for admission. Please contact the Center for Environmental Studies for the most current curriculum guidelines.

Required courses for certificate	credits
URSP/ENVS 331 Environmental Systems or URSP/ENVS/GEOS 332 Environmental Management	3
ENVS/POLI 311 Politics of the Environment	3
ECON 325 Environmental Economics	3
ENVS 490 Research Seminar in Environmental Studies	3
STAT 210 Basic Practice of Statistics or MGMT 301 Business Statistics	3
Three additional credits in a statistics course above STAT 210 (students may not receive credit for both STAT 210 and MGMT 301)	3
	18

### Additional recommended courses

BIOL 151-152, BIOZ 151L-152L Introduction to Biological Sciences and Laboratory  
CHEM 101-102, CHEZ 101L-102L General Chemistry and Laboratory

## Forensic Science Program

Pending approval of a separate M.S. degree program by the State Council of Higher Education for Virginia)

Byrd, Mason, Instructor (Criminal Justice)<sup>++</sup>  
J.D. University of Virginia  
Dawson, Tracey C., Assistant Professor (Biology)<sup>+</sup>  
Ph.D. University of North Carolina at Chapel Hill  
Eggleston, William B., Associate Professor and Director (Biology)<sup>++</sup>  
Ph.D. University of Wisconsin at Madison  
Ferrara, Paul B., Distinguished Professor (Division of Forensic Science)<sup>++</sup> (Chemistry)<sup>+</sup>  
Ph.D. Syracuse University  
Ph.D. State University of New York College of Environmental Science and Forestry  
Marone, Peter M., Associate Professor (Division of Forensic Science)<sup>++</sup> (Chemistry)<sup>+</sup>  
M.S. University of Pittsburgh  
Peace, Michelle, Instructor (Chemistry)<sup>+</sup>  
M.F.S. George Washington University  
Poklis, Alphonse, Professor (Pharmacology and Toxicology)<sup>++</sup> (Chemistry and Pathology)<sup>+</sup>  
Ph.D. University of Maryland  
Porter, Robin D., Associate Professor (Division of Forensic Science)<sup>++</sup> (Chemistry)<sup>+</sup>  
M.S. University of North Carolina at Chapel Hill

+ Department in parentheses indicates affiliate appointment.

++ Affiliate appointment in parentheses indicates home department.

The objective of the Master of Science in Forensic Science Program is to prepare students for careers as forensic scientists in government and private laboratories. Broad exposure to the specializations within the field is offered, including drug analysis, DNA analysis, trace evidence, criminalistics and legal issues. A strong emphasis on lab courses provides students with significant laboratory work prior to graduation. Required lab courses are taught at the Virginia Division of Forensic Science Lab, which is nationally accredited by the American Society of Crime Laboratory Directors.

The program requires 36 semester hours of course work. The graduate program is designed to accommodate full-time students. Nearly all courses are offered in the evenings after 4 p.m.

### Admission requirements

Beyond the general School of Graduate Studies standards listed in the Graduate

Studies at VCU chapter in this bulletin, admissions will be based on:

- A minimum GPA of 2.7 on a 4.0 scale
- A satisfactory score on the GRE – general test only. Call (800) GRE-CALL for exam information.
- Previous evidence of ability to perform graduate level work (where applicable)
- Four-year undergraduate degree in one of the natural sciences
- Completion of eight credits of organic chemistry with lab.

**Application deadline for receipt of all materials is April 1 each year for fall admission. There are no spring admissions in the Forensic Science Program. No interview is required for admission.**

### Degree Requirements

In addition to general graduation requirements, students must complete:

- a minimum of 36 graduate semester credits as outlined in the accompanying list of core requirements and electives.
- the 36 semester credits referenced above with an overall GPA of 3.0 or above.

#### Core requirements (7 courses/21 credits)

FRSC/CRJS 571 Survey of Forensic Science  
FRSC/CRJS 670 Forensic Evidence and Criminal Procedure

FRSC 671 Drug Analysis (lecture/laboratory)  
FRSC 673 Trace Evidence (lecture/laboratory)  
FRSC 675 Serology and DNA (lecture/laboratory)  
FRSC 677 Expert Testimony in Forensic Science  
FRSC 793 Forensic Laboratory Internship

#### Electives (5 courses or 15 credits)

BIOL 530/HGEN 501 Human Genetics  
BIOS 543/STAT 543 Statistical Methods I  
CLLS 501, 502 Instrumental Methods of Analysis I, II  
FRSC 672 Advanced Drug Analysis (lecture/laboratory)  
FRSC 674 Criminalistics (lecture/laboratory)  
FRSC 676 Forensic Biology and DNA (lecture/laboratory)  
FRSC/CRJS 680 Forensic Psychiatry  
PHTX 535 Introduction to Toxicology  
PHTX 644 Forensic Toxicology  
Other electives permitted with permission of advisor.

### Financial information

Information and application forms for financial aid information may be secured from the VCU Financial Aid Operations Center, 901 W. Franklin St., Room 107, Richmond, VA 23284-3026, (804) 828-6669.

## Correspondence and information

General program information can be obtained by accessing the program's home-page: <http://www.has.vcu.edu/forensics>. Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

## Graduate courses in forensic science (FRSC)

### FRSC 571/CRJS 571 Survey of Forensic Science

Semester course; 3 lecture hours. 3 credits. History and current status of forensic science as the intersection of crime, law, biology, and chemistry. Review of specialties within the field, analytical techniques employed, and career opportunities in the field.

### FRSC 670/CRJS 670 Forensic Evidence and Criminal Procedure

Semester course; 3 lecture hours. 3 credits. Presents the law of criminal procedure and rules of evidence as applied to forensic science. Explores issues of scientific versus legal burdens of proof, legal terminology, and trial procedure.

### FRSC 671 Drug Analysis

Semester course; 3 lecture and/or laboratory hours. 3 credits. Chemical and pharmacological aspects of commonly abused drugs. Drug classification and analysis using chromatography and spectroscopy.

### FRSC 672 Advanced Drug Analysis

Semester course; 3 lecture and/or laboratory hours. 3 credits. Isolation and identification of abused drugs emphasizing the analysis of unknowns, problems encountered in analysis, and chain of custody issues.

### FRSC 673 Trace Evidence

Semester course; 3 lecture and/or laboratory hours. 3 credits. Presents the physical and chemical properties and analysis of arson and explosives, gun shot residue, paint and blood spatter analysis, and crime scene documentation.

### FRSC 674 Criminalistics

Semester course; 3 lecture and/or laboratory hours. 3 credits. Microscopic analysis and identification of fingerprints, questioned documents, fibers, glass fragments, and hair. Evidence collection and preservation.

### FRSC 675 Serology and DNA

Semester course; 3 lecture and/or laboratory hours. 3 credits. Identification and analysis of blood and body fluids, species determination, electrophoresis, introduction to DNA.

### FRSC 676 Forensic Biology and DNA

Semester course; 3 lecture and/or laboratory hours. 3 credits. Extraction and purification of DNA, sample evaluation, analysis, and interpretation of genetic testing.

### FRSC 677 Expert Testimony in Forensic Science

Semester course; 3 lecture hours. 3 credits. Examines forensic testimony in the courtroom, communication of scientific findings to a general audience, public speaking skills, trial preparation and cross-examination in

moot court format. This course should be taken near the end of the degree program.

### FRSC 680/CRJS 680 Forensic Psychiatry

Semester course; 3 lecture hours. 3 credits. Guilty mind requirements in criminal law. Competency to stand trial, insanity defense, mental disorder and crime. Behavioral profiling of serial murders and sex offenders. Issues in the use of clinical and statistical prediction methods in criminal justice.

### FRSC 793 Forensic Laboratory Internship

Semester course; 3 lecture and/or laboratory hours. 3 credits. Students must apply for this internship a semester in advance. An internship in a forensic laboratory where a student conducts replication, validation or other analyses in a specialization area of interest. The product of this experience will be a paper suitable for presentation at a professional conference. This capstone course should be taken near the end of the degree program. Graded as pass/fail.

## Department of History

Auerbach, Alexander J., Assistant Professor

Ph.D. Emory University

English history.

Bendersky, Joseph W., Professor

Ph.D. Michigan State University

German history.

Briceland, Alan V., Associate Professor

Ph.D. Duke University

Virginia, early national, military history.

Craig, Leigh Ann, Assistant Professor

Ph.D. Ohio State University

Medieval, Renaissance/Reformation history.

Herman, John, Assistant Professor

Ph.D. University of Washington

East Asian history.

Jones Jr., Norrece T., Associate Professor

Ph.D. Northwestern University

African-American history.

Kennedy, Susan Estabrook, Professor and

Department Chair

Ph.D. Columbia University

Modern American and women's history.

Moitt, Bernard C., Associate Professor

Ph.D. University of Toronto

African history and African Diaspora.

Moore, James T., Professor Emeritus

Ph.D. University of Virginia

Southern and Virginia history.

Munro, George E., Professor

Ph.D. University of North Carolina

Russian history.

Schwarz, Philip J., Professor

Ph.D. Cornell University

Colonial and American constitutional history.

Trani, Eugene P., Professor and University President

Ph.D. Indiana University

American diplomatic history.

Tunnell, Ted, Associate Professor

Ph.D. University of California at Berkeley

Southern and Civil War history.

Urofsky, Melvin I., Professor

Ph.D. Columbia University

J.D. University of Virginia

American constitutional and legal history.

Yanikdag, Yücel, Assistant Professor

Ph.D. Ohio State University

Middle Eastern history.

The department offers a program leading to a master of arts in history. The program allows maximum flexibility by permitting each student, in consultation with the department's director of graduate studies, to select those courses most appropriate to the student's interests, in order to develop the student's competence in pursuit of his or her scholarly and professional objectives.

## Admission requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, the following requirements, established by the History Graduate Affairs Committee, represent the minimum acceptable standards for admission:

- 30 hours of undergraduate history courses, of which 18 should be at the upper-division level
- a GPA that is indicative of the applicant's ability to pursue successfully a graduate degree
- three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate school
- completion of the GRE
- submission of a 500-word written statement of intent, indicating why the applicant wishes to pursue a graduate degree in history

A personal interview is not required, but may be requested by either the applicant or the department's Graduate Affairs Committee.

## Degree requirements

The master of arts in history may be achieved through one of two options. The thesis option requires 30 semester credits, including six credits of HIST 698; or the non-thesis option requires 36 semester credits. Those in the non-thesis track must take a minimum of six semester credits in research-level courses, and also an oral comprehensive exam. All students in both tracks must take HIST 601 as a prerequisite or corequisite for all research courses; students entering in January should take HIST 601 the next time it is offered.

## Graduate courses in history (HIST)

### HIST 511 Studies in American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in American history, primarily through lectures and readings. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 515 Studies in European History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in European history, primarily through lectures and readings. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 519 Studies in Ethnic and Social History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in ethnic or social history, primarily through lectures and readings. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 523 Studies in Virginia and Southern History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in Virginia or Southern history, primarily through lectures and readings. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 527 Studies in African-American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in African-American history, primarily through lectures and readings. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 591 Special Topics in History

Semester course; 1-3 lecture hours. Variable; 1-3 credits. May be repeated with different topics for a maximum of nine credits. An intensive study of a selected topic in history.

### HIST 601 Historiography and Methodology

Semester course; 3 lecture hours. 3 credits. A study of the development of history as a discipline from ancient times to the present. The course examines the evolution of historical theory and philosophy, great historians, schools of interpretation, and problems of historical methodology. This course is a prerequisite for research seminars.

### HIST 611 Readings in American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of American history through readings and class discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 615 Readings in European History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of European history through readings and class discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 619 Readings in Ethnic and Social History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular

area of ethnic or social history through readings and class discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 623 Readings in Virginia and Southern History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of Virginia or Southern history through readings and class discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 627 Readings in African-American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of African-American history through readings and class discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 631 Research in American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of American history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 635 Research in European History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of European history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 639 Research in Ethnic and Social History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of ethnic or social history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 643 Research in Virginia and Southern History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of Virginia or Southern history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 647 Research in African-American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of African-American history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topic to be offered each semester.

### HIST 691 Special Topics in History

Semester course; 1-3 lecture hours. Variable; 1-3 credits. May be repeated for a maximum of 9 credits. An intensive study of a selected topic in history.

### HIST 692 Independent Study

Semester course; 1-3 credits. Maximum of six credits. Prerequisite: Permission of department chair. Requires an analysis of a historical problem or topic in depth under faculty supervision.

### HIST 693 Internship in History

Semester course; variable; 2-4 credits per semester. Maximum of six credits. Determination of the amount of credit and permission of departmental internship coordinator must be procured prior to registration for this course. Students receive credit for work on historical projects with approved agencies.

### HIST 698 M.A. Thesis

1-6 credits. May be repeated for a maximum of six credits.

## Elective courses

Students may take up to six semester credits of non-history electives from an approved list. The department's graduate affairs committee maintains the list of approved courses, and students may use these courses for credit with the approval of the graduate director. In addition, students who wish to pursue specific areas of study may, with the approval of the graduate director, substitute other courses when appropriate, but in no case shall be able to count more than six semester hours of non-history courses.

## Department of Mathematics and Applied Mathematics

Abay-Asmerom, Ghidewon, Associate Professor

Ph.D. Western Michigan University

Topological graph theory.

Berglund, John F., Professor

Ph.D. Tulane University

Topological algebra and harmonic analysis.

Deveney, James K., Professor

Ph.D. Florida State University

Commutative algebra.

Ellington, Aimee, Assistant Professor

Ph.D. University of Tennessee

Meta-analysis and mathematical pedagogical techniques.

Farley, Reuben W., Professor

Ph.D. University of Tennessee

Topological algebra.

Haver, William E., Professor

Ph.D. State University of New York at Binghamton

Geometric topology.

Kent, Candice M., Assistant Professor

Ph.D. University of Rhode Island

Difference equations.

Lewis, Andrew M., Associate Professor and

Department Chair

Ph.D. University of California at Berkeley

Mathematical logic.

Schmeelk, John F., Professor

Ph.D. George Washington University

Applied mathematics.

Sedaghat, Hassan, Associate Professor

Ph.D. George Washington University

Difference equations and applied mathematics.

Terrell, William J., Associate Professor

Ph.D. North Carolina State University

Applied mathematics, differential equations and mathematical control theory.

Wood, James A., Professor and Director of Graduate Affairs  
Ph.D. University of Virginia  
Functional analysis.

#### Emeriti faculty

Lohr, C. Michael, Associate Professor Emeritus  
Ed.D. University of Virginia  
Mathematical education.

Morris, J. Richard, Associate Professor Emeritus  
Ph.D. University of Alabama  
Topology.

Raychowdhury, Pratip N., Professor Emeritus  
Ph.D. George Washington University  
Applied mathematics and mathematical physics.

A master of science in mathematical sciences is offered jointly by the Department of Mathematics and Applied Mathematics and the Department of Statistical Sciences and Operations Research. The master of science in mathematical sciences offers specializations in several possible areas, including mathematics, applied mathematics, operations research, statistics, statistical computing, applied computational mathematics, discrete structures and others.

### Admission requirements

In addition to the general requirements for admission to graduate programs listed in the School of Graduate Studies chapter and the College of Humanities and Sciences chapter of this bulletin, the following requirements represent the minimum acceptable standards for admission:

- Thirty credits in undergraduate mathematical sciences, computer science or related areas of which at least 18 semester credits must represent upper-level courses.
- Three letters of recommendation pertaining to the student's potential ability as a graduate student in mathematical sciences.
- General GRE scores required.

Provisional admission may be granted when deficiencies exist. These deficiencies must be removed by the end of the first year of residence, or its part-time equivalent, when the student's application will be re-examined. Courses that are remedial or designed to remove deficiencies will not be accepted for credit toward the fulfillment of the course requirements for the master's degree.

### M.S. in Mathematical Sciences Program

Non-thesis Option	credits
Mathematical sciences (including both semesters of a 600-level sequence)	21
Mathematical sciences or allied health field*	6-9
Research seminar credits**	2-5
Directed research credits**	0-3
Total	30

Thesis Option	credits
Mathematical sciences (including both semesters of a 600-level sequence)	18
Mathematical sciences or allied health field*	6-9
Thesis credits	3 or 6
Research seminar credits**	1-3
Directed research credits**	0-3
Total	30

\* Courses selected from an allied field must be approved by the department's Graduate Affairs Committee.

\*\* The student who chooses the non-thesis option may receive a maximum total of four credits for MATH 690 Research Seminar and MATH 697 Directed Research. The student who chooses the thesis option usually will not take directed research, but he or she is not prohibited from doing so. In the thesis option, a total of seven credits for thesis, research seminar and directed research is the maximum credit permitted.

### M.S. degrees in mathematical sciences

Students may obtain a designation on their transcripts indicating that their graduate study has emphasized one of the following graduate concentrations by completing the requirements that are listed here for that concentration. A student who has not satisfied the requirements for one of these concentrations, but who has otherwise fulfilled all the requirements for a master's degree, will be awarded a degree of master of science in mathematical sciences without any specialization.

#### M.S. in applied mathematics/mathematical sciences

MATH 517, 518\*; a six-credit sequence selected from MATH 617-618, 619, 620, 621 and at least six credits selected from MATH 511, 512, 515, 516, 527-528, 615, 689, STAT 513-514. Also, at least one seminar and the thesis (if chosen) must concern topics of applied mathematics.

#### M.S. in mathematics/mathematical sciences

MATH 507, 508\*; a six-credit sequence selected from 601-602, 603-604, 607-608, 611-612, and at least three credits from MATH 505, 509, 510, 521, 525 or any other

wise uncoupled 600-level course for this concentration. Also, at least one seminar and the thesis (if chosen) must concern topics of pure mathematics.

\* If a student previously received credit for one or both of these courses or their equivalent, then one or two of the other courses mentioned for this concentration must be taken as substitute(s) to satisfy the minimum requirement of 15 credits of course work in the concentration.

### Graduate courses in mathematics (MATH)

#### MATH 501 Introduction to Abstract Algebra

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MATH 300 and 310 (or their equivalents). An introduction to groups, rings and fields from an axiomatic point of view. Coset decomposition and basic morphisms.

#### MATH 505 Modern Geometry

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MATH 300 and (MATH 307 or MATH 310). Topics in Euclidean, projective and non-Euclidean geometries from a modern viewpoint.

#### MATH 507-508 Analysis I-II

Continuous course; 3 lecture hours. 3-3 credits.  
Prerequisites: MATH 300, 307 and 310, or permission of instructor. Theoretical aspects of calculus, sequences, limits, continuity, infinite series, series of functions, integration, differential geometry.

#### MATH 509-510 General Topology I-II

Continuous course; 3 lecture hours. 3-3 credits.  
Prerequisites: MATH 300 and MATH 307. Foundations and fundamental concepts of point-set topology. Topological spaces, convergence, connected sets, compactness, product spaces, quotient spaces, function spaces, separation properties, metrization theorems, mappings and compactifications.

#### MATH 511 Applied Linear Algebra

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MATH 310. The algebra of matrices, the theory of finite dimensional vector spaces and the basic results concerning eigenvectors and eigenvalues, with particular attention to applications.

#### MATH 512 Complex Analysis for Applications

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MATH 307 and (MATH 300 or knowledge equivalent to MATH 300). The algebra and geometry of complex numbers, analytic functions, integration, series, contour integration, analytic continuation, conformal mapping, with particular attention to applications.

#### MATH 515 Numerical Analysis I

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MATH 310 or (MATH 201 and MATH 185). Knowledge of a programming language recommended. Solutions of equations, interpolation and approximation, numerical integration, iterative methods for solving linear equations, calculation of eigenvalues and eigenvectors. Selected algorithms may be programmed for solution on computers.

### MATH 516 Numerical Analysis II

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH 515. Numerical solution of initial value problems in ordinary differential equations, two-point boundary value problems. Introduction to numerical techniques for solving partial differential equations. Selected algorithms may be programmed for solution on computers.

### MATH 517-518 Methods of Applied Mathematics

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisites: MATH 301 and MATH 307 and (MATH 300 or knowledge equivalent to MATH 300). Vector analysis, matrices, complex analysis, special functions, Legendre and Hermite polynomials. Fourier series, Laplace transforms, integral equations, partial differential equations, boundary-value and initial-value problems.

### MATH 520/OPER 520 Game Theory and Linear Programming

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH 310. The mathematical basis of game theory and linear programming. Matrix games, linear inequalities and convexity, the mini-max theorems in linear programming, computational methods and applications.

### MATH 521 Introduction to Algebraic Number Theory

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH 501. Introduction to algebraic numbers and algebraic number fields with emphasis on quadratic and cyclotomic fields. Units, primes, unique factorization.

### MATH 525 Introduction to Combinatorial Mathematics

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 300 and 310, or permission of instructor. Introduction to the problems and methods of solution in the enumeration, existence and construction of some discrete mathematical structures. Discussion of generating functions, recurrence relations, Ramsey's theorem, matching theory, combinatorial designs, Latin squares and linear coding theory.

### MATH 530 The History of Mathematics

Semester course; 3 lecture hours. 3 credits.

Prerequisites: 17 credits at the 200 level or above in mathematical sciences or permission of instructor. Surveys major trends in the development of mathematics from ancient times through the 19th century and considers the cultural and social contexts of mathematical activity. Either MATH 530 or MATH 531 (but not both) may be applied to the master's degree in mathematical sciences or the M.S. degree in computer science. Both MATH 530 and MATH 531 may be applied to the M.Ed. degree in mathematics education.

### MATH 531 Expositions in Modern Mathematics

Semester course; 3 lecture hours. 3 credits.

Prerequisite: Six credits at the 400 level or above in mathematical sciences. Studies descriptively several major ideas relevant to present-day mathematics, such as the advent of pure abstraction, difficulties in the logical foundations of mathematics, the impact of mathematics and statistics in the 20th century, and the computer revolution. Either MATH 530 or MATH 531 (but not both) may be applied to the master's degree in mathematical sciences or the M.S. degree in computer

science. Both MATH 530 and MATH 531 may be applied to the M.Ed. degree in mathematics education.

### MATH 532 Ordinary Differential Equations I

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH 301 and 310 or the equivalent. MATH 507 is recommended. Existence and uniqueness for systems, linear systems, fundamental matrix solutions, matrix exponential, nonlinear systems, plane autonomous systems and introduction to stability.

### MATH 555/ENGR 555 Dynamics and Multivariable Control I

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH 301 and 310 or the equivalent. Systems of differential equations with controls, linear control systems, controllability, observability, introduction to feedback control and stabilization.

### MATH 591 Topics in Mathematics

Semester course; 1-3 credits. May be repeated for credit with different topics. Prerequisite: Permission of the instructor. Open to qualified undergraduates. A study of selected topics in mathematical sciences. See the Schedule of Classes for specific topics and prerequisites.

### MATH 601-602 Abstract Algebra I, II

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisite: MATH 501. A study of algebraic structures (including groups, rings, and fields), Galois theory, homomorphisms, subalgebras, direct products, direct decompositions, subdirect decompositions, free algebras, varieties of algebras.

### MATH 603-604 Advanced Probability Theory

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisites: MATH 508 and STAT 503 or STAT 513. A measure-theoretic approach to the theory of probability. Borel sets, probability measures, and random variables. Special topics include characteristic functions, modes of convergence, and elements of stochastic processes.

### MATH 607-608 Real Analysis I, II

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisite: MATH 508. The real number system, Lebesgue measure, functions of bounded variation, differentiation and integration, the LP spaces, introduction to Banach and Hilbert spaces, general measure theory, and the Lebesgue-Stieltjes integral.

### MATH 611-612 Complex Analysis I, II

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisite: MATH 508. Elementary functions, analyticity, Cauchy's theorem and integral formula, Taylor and Laurent series, poles, residues, analytic continuation, Riemann surfaces, periodic functions, conformal mapping, and applications.

### MATH 615 Topics in Numerical Analysis

Semester course; 3 lecture hours. 3 credits. May be taken twice for credit. Prerequisites: MATH 515-516 and permission of instructor. Special topics in computer methods for numerical analysis selected from such subjects as analysis of numerical methods for solving ordinary differential equations; elliptic, hyperbolic, and parabolic partial differential equations; solutions of large linear systems by iterative methods.

### MATH 617-618 Applied Mathematics I, II

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisites: MATH 517 and 518. Partial differential

equations; equations of Helmholtz, Laplace, and Poisson; the diffusion equation, integral transforms, Green's function methods, calculus of variation, eigenvalues and eigenfunctions by variational methods, integral equations, and Fredholm and Hilbert-Schmidt theories.

### MATH 619 Operational Methods

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH 508. Transform methods applied to existence theory, explicit solutions to problems of mathematical physics, distributions of Schwartz and Gelfand-Silov, kernel theorems of Schwartz, mathematical framework of quantum field theory.

### MATH 620 Theory of Partial Differential Equations

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 301 and 508. Classification of partial differential equations; elliptic, hyperbolic, and parabolic equation; potential theory, techniques of solving various partial differential equations; application to electromagnetism and solid mechanics.

### MATH 621 Boundary-Value Problems

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 517-518. Survey of boundary-value problems, approximate analytic solutions such as Galerkin's method and the Ritz method; application to heat transfer, fluid mechanics, and potential theory.

### MATH 632 Ordinary Differential Equations II

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 507 and 532 or permission of instructor. Existence and uniqueness theory, invariant manifolds associated with equilibria and Lyapunov stability analysis.

### MATH 655/ENGR 655 Dynamics and Multivariable Control II

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 555 and MATH 507 recommended, or permission of instructor. Control problems for nonlinear systems of ordinary differential equations, methods of feedback control to achieve control objectives.

### MATH 690 Research Seminar

Semester course; 1 credit. May be repeated for credit. Prerequisite: Graduate standing. Discussion of topics in the mathematical sciences as stimulated by independent reading in selected areas and at least one oral presentation by each student.

### MATH 691 Special Topics in Mathematics

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Prerequisite: Permission of instructor. A detailed study of selected topics in mathematics. Possible topics include commutative rings and algebras, topological groups, special functions, Fourier analysis, abstract harmonic analysis, operator theory, functional analysis, differential geometry, Banach algebras and control theory.

### MATH 697 Directed Research

Semester course; variable; 1-3 credits per semester. May be repeated for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one which significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

**MATH 698 Thesis**

Hours to be arranged. 1-3 credits. A total of three or six credits may be applied to the M.S. in applied mathematics/mathematical sciences or to the M.S. degree in mathematics/mathematical sciences. May be repeated for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this bulletin. Grade of "S," "U," or "F" may be assigned in this course.

**Department of Physics**

Baski, Alison A., Associate Professor (Electrical Engineering)\*

Ph.D. Stanford University

Silicon surface structure and growth, scanning tunneling microscopy.

Bishop, Marilyn F., Associate Professor

Ph.D. University of California, Irvine

Transport theory for simple metals, highly-correlated electron systems, charge and spin density waves, superconductivity, polymerization kinetics of biological polymers, light scattering from polymers, semiconducting devices.

Gibbs, Zane P., Affiliate Assistant Professor and

Associate Research Scientist, Philip Morris, USA

Ph.D. Virginia Commonwealth University

Highly correlated electron systems and condensed matter theory.

Gowdy, Robert H., Associate Professor and

Department Chair

Ph.D. Yale University

Theory of general relativity, cosmology, quantum gravity.

Jena, Purusottam, Professor

Ph.D. University of California, Riverside

Electronic structure and properties of defects in metals and small atomic clusters, metal-matrix composites, surface and interfaces, hydrogen-metal systems, cluster solids.

Khanna, Shiv N., Professor

Ph.D. University of Delhi, India

Theory of small clusters, cluster assembled materials, novel cage clusters, quasicrystals, low dimensional systems, magnetism in small clusters and low dimensions.

Lilly Jr., Armys Clifton, Affiliate Professor and Vice

President, Technology Assessment and Research

Fellow, Philip Morris, USA

Ph.D. Virginia Polytechnic Institute and State University

Condensed matter theory.

Morkoc, Hadis, Professor (Electrical Engineering)\*

Ph.D. Cornell University

Compound semiconducting materials and devices.

Niculescu, Vasile A., Associate Professor

Ph.D. University of Cluj, Romania

Experimental solid state, surface structure and properties of alloys, magnetic and structural properties of metals and alloys.

Rao, Bijan K., Professor

Ph.D. University of California, Riverside

Electronic structure and properties of atomic clusters, conducting polymers, many-body theory.

Tait, Gregory B., Associate Professor (Electrical Engineering)\*

Ph.D. Johns Hopkins University

Development of novel semiconductor devices for high-frequency and optical circuits, numerical modeling and computer simulation of electronic devices and circuits, biomedical applications of microwave and millimeterwave radiation.

\* Department in parentheses indicates affiliate appointment.

+ Affiliate appointment in parentheses indicates home department.

The Department of Physics offers a master of science degree in physics with a traditional set of core physics courses and a variety of specialized electives emphasizing the department's strengths in theoretical and experimental physics, and in physics education. The faculty members in the graduate program have research interests in the areas of theoretical condensed matter physics (atomic clusters and nanoscale materials, highly correlated electron systems, biophysics), experimental condensed matter physics (surface physics, materials physics), general relativity and cosmology, and physics education. The master of science program is designed to be completed in two years (four semesters). For more information visit the Department of Physics Web site: <http://www.has.vcu.edu/phy>.

**Accelerated B.S.-M.S. Program**

Students who are enrolled in the physics bachelor of science program may elect to take graduate courses that will count toward the physics master of science degree. Up to six hours of graduate credit may be earned in this way without any special provision. In order to offer more than six hours of pre-admission graduate credit toward the graduate degree, a student must apply to the physics department Graduate Admission Committee for admission to the Accelerated B.S.-M.S. Program. Persons applying for admission to this program (1) should submit a curricular plan for completing the physics B.S. degree within two years or its part-time equivalent; (2) should indicate which graduate courses they intend to offer toward the physics M.S. degree; (3) should have a "B" average or better.

The M.S. Degree Completion Form should be accompanied by a memo from the physics department Graduate Admission Committee to indicate which graduate courses were taken under the Accelerated B.S.-M.S. Program.

**Admission requirements**

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, students are expected to satisfy the following minimum standards for admission:

- Thirty semester credits in undergraduate physics or engineering of which at least 18 semester credits must be at the upper level in physics.
- Three letters of recommendation pertaining to the student's potential as a physics graduate student.
- Satisfactory GRE scores on the general test.

Provisional admissions may be granted where deficiencies exist. These deficiencies must be removed by the end of the first year of residence or its part-time equivalent, when the student's application will be re-examined. Courses which are designed to remove deficiencies will not be accepted for credit toward the master of science degree.

**Degree requirements****Course requirements**

Each student is required to take 30 semester credits of approved graduate courses (see M.S. plan of study) with at least 15 semester credits at the 600 level. PHYS 690 and PHYS 697 may not exceed 15 of the required 30 credit hours.

**M.S. plan of study**

Each student will choose a primary adviser during the first semester of study. At the end of the first semester, the student and adviser will propose an M.S. plan of study to the Graduate Curriculum Committee. This plan will include the graduate courses and research subject matter to fulfill the student's individual career goals.

Normally, each student will select courses for their individual M.S. plan of study from the list of graduate courses in physics. The courses selected will include no fewer than nine credits of traditional physics core courses, such as PHYS 576 and PHYS 580, to provide a solid foundation in fundamental physics. However, students also may select graduate courses in chemistry, mathematics, computer science and engineering, as well as from the schools of Medicine and Education, when such courses are consistent with the student's career goals.

The M.S. plan of study must be approved by the Physics Graduate Curriculum Committee. Courses taken outside this plan will not count toward the above general course requirements.

### Thesis or Non-thesis Option

Each student must select either the Thesis Option or Non-thesis Option. Students selecting the Thesis Option must take at least nine credit hours of PHYS 697 Directed Research. No more than nine semester credits of Directed Research may be counted toward the 15 credit 600-level requirement.

Students selecting the Non-thesis Option may take no more than three hours of PHYS 697. A student who elects the Non-thesis Option must pass a written comprehensive exam. This exam will be administered by the Physics Graduate Curriculum Committee.

### Graduate courses in physics (PHYS)

#### PHYS 508 The Physical Science of Space for Teachers

Semester course; 3 credits. Prerequisites: B.S. or B.A. degree with at least two mathematics and two science courses or permission of instructor. The course is designed for the secondary physical science and physics teachers. The physical science phenomena of the solar system and the universe: mechanics, electromagnetism, optics and energy are presented for the teacher. The course curriculum closely follows the Virginia Science Standards of Learning for Physics and Physical Science. The course makes use of the Virginia Science Museum's interactive physical science exhibit galleries (aerospace, force and motion, waves and patterns, light and vision matter, crystals and electromagnetism as well as the Digistar planetarium and telescopes.

#### PHYS 509 Experiencing Science for Teachers

Semester course; 3 lecture hours. 3 credits. Prerequisites: B.S. or B.A. degree with at least two mathematics and two science courses or permission of instructor. Designed to give physical science and physics teachers an understanding of the methods and processes actually used by scientists in different disciplines. Students repeat classic experiments, read from original works, keep detailed research journals, participate in laboratory experiments, engage in the peer review process and present results of projects in colloquium format. The course meets at the Science Museum of Virginia and uses the interactive science exhibits; visits to science sites in the area.

#### PHYS 510 Physical Science Demonstrations

Semester course; 3 credits. Prerequisites: PHYS 509 or permission of instructor. The course is designed to give the working secondary physical science and physics teacher a depth of experience in designing and effectively using experiments to interpret phenomena for students. Participants learn the essentials of developing effective apparatus for investigations, interactive exhibits and demonstrations in the physical sciences.

Students will undertake and present a major project as part of the course.

#### PHYS 520 Introduction to Radiation Therapy Physics Laboratory

Semester course; 2 laboratory hours. 1 credit. Provides practical exercises in the radiation measurement devices and quality assurance procedures commonly employed in radiation therapy physics. Measurements of beam characteristics for treatment machines, including electron linear accelerators, and radioactive sources, including high dose rate brachytherapy are investigated.

#### PHYS 550 Techniques in Material Research

Semester course; 4 laboratory and 2 lecture hours. 3 credits. Prerequisite: Laboratory equivalent to PHYS 320L or PHYS 450. This course focuses on the application of modern characterization techniques in materials research. Techniques to be studied include high-resolution X-ray diffraction, low-energy electron diffraction, light-energy electron diffraction, scanning-tunneling microscopy, molecular beam epitaxy, Auger electron spectroscopy and X-ray photoemission spectroscopy.

#### PHYS 563 Radiological Physics and Radiation Dosimetry

Semester course; 3 lecture hours. 3 credits. Prerequisites: Equivalent of PHYS 376 and PHYS 380 or permission of instructor. Covers the fundamental conceptual, mathematical and physical aspects of radiation interactions with matter and energy deposition, including a thorough understanding of basic quantities and units. Application to the principles and methods of radiation detection and dosimetry will be emphasized.

#### PHYS 567 Introduction to Radiation Therapy Physics

Semester course; 3 lecture hours. 3 credits. Covers the fundamental conceptual and technical aspects of the use of ionizing radiation to evoke a therapeutic response/benefit to patients. Treatment planning and dose calculations for external beam radiation therapy and brachytherapy are emphasized.

#### PHYS 571 Theoretical Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301 and MATH 301 or permission of instructor. An introduction to advanced dynamics involving the Lagrangian and Hamiltonian formalisms.

#### PHYS 573 Analytical Methods in Physics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301, PHYS 376, and PHYS 380 or permission of instructor. Theoretical and numerical techniques in solving differential equations in condensed matter. Classification of electronic states in solids and clusters using groups, infinite series approximations, calculus of residues and causality.

#### PHYS 576 Electromagnetic Theory

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 376 and MATH 301 or permission of instructor. Maxwell's equations of electromagnetism, vector and scalar potentials, electromagnetic waves and radiation theory.

#### PHYS 580 Quantum Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 380, MATH 307 or permission of instructor. Theoretical quantum descriptions with emphasis upon mathematical techniques. Schrodinger

equation, hydrogen atom, eigenfunctions and eigenvalues, angular momentum and spin and perturbation theory.

#### PHYS 591 Topics in Physics

Semester course; 3 lecture hours. Variable; 1-3 credits. Open to graduate students and to undergraduate students with advanced standing. An in-depth study of a selected topic in advanced physics. See the Schedule of Classes for specific topic(s) and additional prerequisites. Applicable toward physics major requirements.

#### PHYS 601 Health Physics

Semester course; 3 lecture hours. 3 credits. Theoretical foundation and practical application of health physics as applied to diagnostic radiology, nuclear medicine and radiation therapy. Regulatory and scientific aspects of the subject are covered. Mathematical models and physical principles of radioactive decay and radiation interactions are used to assess the relative values of different radiation safety practices.

#### PHYS 630 Radiobiology for the Medical Physicist

Semester course; 3 lecture hours. 3 credits. Covers the fundamental aspects of radiobiology with specific emphasis on relative biological effectiveness and linear energy transfer, the oxygen effect, radiation carcinogenesis, DNA repair, hereditary effects of radiation, radiation-induced cell killing, cellular responses to radiation including cell cycle effects and activation of cell signal transduction pathways, early and late effects of radiation, and time, dose and fractionation in radiotherapy.

#### PHYS 633 Advanced Radiation Therapy Physics

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: PHYS 563 and PHYS 567 or instructor's permission. The course presents a survey of modern developments and methodological tools used in the following areas of radiation oncology physics: experimental dosimetry, computational dosimetry, quality assurance and commissioning, and advanced treatment planning and delivery modalities. By means of hands-on projects and literature reviews, students will become acquainted with the medical physics literature and acquire practical skills in selected areas. The course consists of a coordinated set of didacted lectures and laboratory projects.

#### PHYS 635 Physics of X-ray Imaging and MRI

Semester course; 3 lecture and 2 laboratory hours. 4 credits. This course will cover the physics of X-ray and magnetic resonance imaging. Emphasis will be placed on the physical foundations of currently used diagnostic techniques and their relevance to the clinical application. The classroom lectures will be enhanced through a series of integrated laboratory exercises.

#### PHYS 636 Physics of CT, Nuclear Medicine and Ultrasound

Semester course; 3 lecture and 2 laboratory hours. 4 credits. This course will cover the physics of computed tomography, nuclear medicine imaging (including PET) and ultrasound. Emphasis will be placed on the physical foundations of currently used diagnostic techniques and their relevance to the clinical setting. The classroom lectures will be enhanced through a series of integrated laboratory exercises.

#### PHYS 641 Solid State Physics

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 510, PHYS 302 and MATH 317, or



permission of instructor. Study of structure and electronic properties of materials in the solid phase.

### PHYS 650 Subatomic Physics I

Semester course offered in cooperation with Virginia State University; 3 credits. Prerequisites: PHYS 576, PHYS 580 and CHEM 510. Studies of nuclei and elementary particles, reaction dynamics, particle accelerators, detection devices, particle classification, symmetries and conservation laws, quantum electrodynamics, the weak interaction, quantum chromodynamics, unified theories, the nuclear shell model and collective model, and nuclear reactions.

### PHYS 651 Subatomic Physics II

Semester course offered in cooperation with Virginia State University; 3 credits. Prerequisites: PHYS 650. A continuation of PHYS 650.

### PHYS 661 Surface and Materials Physics

Semester course; 3 credits. Prerequisites: PHYS 641, CHEM 510 or permission of instructor. This course will focus on the physics of surface, interfacial and other nanostructured material systems, and the experimental techniques used to assay their geometric and electronic properties. Topics include ultra-high vacuum techniques and design, surface geometric and electronic structure, adsorbates on surfaces and interface formation, thin film growth, and layered systems. Characterization techniques to be discussed include geometric probes (STM, AFM, RHEED, LEED, AFM, XRD) and synchrotron radiation based electronic structure probes (PES, SXF, NEXAFS).

### PHYS 663 Studies in Nuclear Physics

Semester course; 3 credits. Credits for only two televised courses will count toward degree requirements. Courses televised by the Virginia Cooperative Graduate Engineering Program. See the Schedule of Classes for selected topics and prerequisites.

### PHYS 670 Conceptual Physics for Teachers I

Semester course; 4 studio hours. 3 credits. Prerequisites: PHYS 508, PHYS 509, and PHYS 510, or permission of instructor. First of the sequence 670-672. Development of the methodology for the experimental design at middle and high school level, concentrating on the science of measurement, materials structure and characterization, and light and optical properties of matter. The 670-672 sequence uses and develops computer-based experiments and interactive multimedia materials for use in the classroom. The course contains examples of vertical integration of technological applications of physical principles across disciplines.

### PHYS 671 Conceptual Physics for Teachers II

Semester course; 4 studio hours. 3 credits. Prerequisite: PHYS 670 or permission of instructor. Second of the sequence PHYS 670-672. Development of the methodology for experimental design at middle and high school level, concentrating on sound and acoustics, electromagnetism and classical mechanics.

### PHYS 672 Conceptual Physics for Teachers III

Semester course; 4 studio hours. 3 credits. Prerequisites: PHYS 671 or permission of instructor. Third of the sequence PHYS 670-672. Development of the methodology for the experimental design at middle and high school level, concentrating on heat, thermodynamics and modern physics.

### PHYS 690 Research Seminar

Semester course; 1 credit. May be repeated for credit up to a limit of four credits. Examines current problems and developments in physics.

### PHYS 691 Special Topics

Semester course; 3 credits. Prerequisites: At least one graduate-level physics course and permission of instructor. Selected topics in physics from such areas as statistical physics, quantum field theory, semiconductor device physics, general relativity, electronic structure of solids, thin-film fabrication techniques, superconductivity, nuclear magnetic resonance techniques, crystallography, and nuclear physics.

### PHYS 697 Directed Research

Semester course; 1-6 credits. May be repeated for credit. Prerequisites: At least one graduate-level physics course and permission of instructor. Research leading to the master of science degree.

## Department of Political Science and Public Administration

Banks, Elliott, Associate Professor

Ph.D. University of Texas

Urban politics, political behavior, leadership studies.

Brock, Deborah McC., Instructor

Ph.D. Virginia Commonwealth University

Public policy, research methods, financial management, citizen participation, community development.

Cargo, Russell, Associate Professor, Director of

Nonprofit Enterprise Institute and Department Chair

Ph.D. University of Colorado

Nonprofit management and governance, nonprofit law, fundraising.

Condit, Deirdre, Assistant Professor

Ph.D. Rutgers University

Public law and courts, feminist theory, women and politics.

Drake, W. Avon, Associate Professor

Ph.D. Cornell University

Race and American politics, Africa, political philosophy/social theory.

Farmer, David, Professor

Ph.D. University of Virginia

Ph.D. University of London

Bureaucracy, political philosophy and theory, public administration.

Funk, Carolyn L., Associate Professor and Director, The Commonwealth Poll

Ph.D. University of California at Los Angeles

U.S. public opinion, voting behavior.

Hambrick, Ralph, Professor

Ph.D. Syracuse University

Public management, public policy analysis, evaluation research and strategic planning.

Hirsch, Herbert, Professor

Ph.D. University of Kentucky

Politics of war, violence and genocide, political psychology, American government and politics.

Holsworth, Robert, Professor and Director, Center for Public Policy

Ph.D. University of North Carolina

U.S. politics, political theory, public policy.

Hutchinson, Janet R., Associate Professor and Director, Public Administration Programs  
Ph.D. University of Pittsburgh  
Research methods, public policy, knowledge use, social welfare.

Jackson, M. Njeri, Associate Professor

Ph.D. Atlanta University

Gender politics and policy, health care, ethnic and racial politics.

Newmann, William, Assistant Professor

Ph.D. University of Pittsburgh

Presidency, foreign policy, bureaucracy and organizational behavior.

Twigg, Judyth, Associate Professor

Ph.D. Massachusetts Institute of Technology

Russia, international security, health care.

Wikstrom, Nelson, Professor

Ph.D. University of Connecticut

Intergovernmental relations, state and local politics, public administration.

Wooldridge, Blue, Associate Professor

D.P.A. University of Southern California

Public finance and budgeting, productivity improvement, public policy.

### Affiliate faculty

Gehring, Donald C., Vice President for External Relations

J.D. University of Notre Dame

Gottfredson, Stephen D., Professor and Dean, College of Humanities and Sciences

Ph.D. Johns Hopkins University

Criminal justice, crime policy.

Nelson, Lynn D., Professor

Ph.D. Ohio State University

Russian studies, comparative political systems, political economy.

Wilder, L. Douglas, Distinguished Professor of

Public Policy

J.D. Howard University School of Law

The Master of Public Administration Program is designed to meet the graduate educational needs of pre-service and in-service professionals for careers in public management and analysis in the public and nonprofit sectors. The program is accredited by the National Association of Schools of Public Affairs and Administration.

### Admission requirements

In addition to the general requirements, selection is made on the basis of prior academic performance, professional accomplishments and other indicators of the ability to pursue graduate studies and a professional career in public management successfully. Specifically, the application for admission requires a transcript documenting the completion of a bachelor's degree, three letters of reference (including both academic and professional references if

possible), a current resume, and a satisfactory standardized test score (GRE, GMAT, MAT, LSAT). Students submitting MAT and LSAT scores must have taken an undergraduate math course (algebra, statistics, finite mathematics) passed with a "C" or better.

### Special students

Without formal admission, but with departmental permission, a student may take up to nine credit hours of instruction. If appropriate, these credits may be applied to the M.P.A. degree or certificate program. Taking such courses in no way guarantees admission to the graduate program.

### Transfer credit

A maximum of nine semester hours of graduate credit from an accredited institution may be applied toward the M.P.A. degree. Such transfer credits will be evaluated at the completion of nine semester hours of work in VCU's graduate program in public administration. These hours will not have been credited toward another degree. For special programs, additional hours may be transferred and applied to the M.P.A. degree with department approval.

### Financial information

Potential students are urged to apply by March 30 for fellowships and scholarships. Paid on-the-job internships are encouraged. The Senator Edward E. Willey Scholarship, the Virginia City Management Association/University Dr. T. Edward Temple Scholarship and the Leigh E. Grosenick Scholarship are available to outstanding students; preference for these three scholarships is given to those who plan public careers in Virginia. VCU graduates have a successful record in obtaining presidential management internships in the federal government, state-government professional positions and local government positions.

### Continuous enrollment requirements and expectations

To remain in good standing, students must maintain continuous registration for each fall and spring semester (except for approved leaves of absence) until they have completed all requirements. Students who fail to register for two consecutive semesters

(summer sessions included) will be dropped automatically from the program and must reapply for admission in order to continue. Exceptions to this policy will be made on an individual basis by petition. Students who reapply after having been dropped for failure to register continuously will be evaluated under the bulletin requirements in effect at the time of readmittance.

A minimum GPA of 3.0 on a four-point scale must be maintained. Compliance with other university regulations also is required.

### Requirements for the degree of master of public administration

- A student must complete a minimum of 36 semester hours, as approved, with an overall GPA of 3.0 or above. Students who do not have at least one year of professional-level experience in the public sector or in a nonprofit agency are required to earn three additional hours of credit in a public service practicum (for a total of 39 semester hours of credit for the degree).
- All students who are required to take the practicum will usually do so during the summer between the first and second years of or during the last semester of course work. The practicum shall last a minimum of 300 hours as required by the National Association of Schools of Public Affairs and Administration. The scheduling of the practicum will be flexible enough to accommodate the needs of those students who pursue the degree on a part-time basis.
- All practicums will be negotiated between VCU and the host agency including the scope of work to be performed by the students, the type and extent of supervision both within the agency and from the university, and the stipend. A learning contract will be executed among the department, the agency and the student. A written student project is required to complete the internship.
- All students are required to complete the courses in the core curriculum unless competence in the subject matter can be demonstrated on the basis of previous experience or course work.

### Advising

After admission in either the M.P.A. or certificate program, a student will be assigned an adviser who will assist in plan-

ning the specific sequence of courses and program of study.

### Core curriculum

#### Required courses

PADM 601 Principles of Public Administration	3
PADM 602 Public Administration Theory	3
PADM 607 Public Human Resource Management	3
PADM 609 Financial Management in Government	3
PADM 623 Research Methods for Public Administration	3
PADM 624 Quantitative Methods for Public Administration	3
PADM 625 Public Policy Analysis	3
PADM 689 Seminar in Public Administration or PADM 690 Reading Seminar	3
	<hr/> 24

#### Electives

	12
	<hr/> 36

#### Practicum (if required)

	3
	<hr/> 39

### Concentration possibilities

Students may develop a concentration in one of several areas from among the elective courses offered by the department or in combination with courses elsewhere in the university. Possibilities include the following concentrations:

environmental policy  
human resource management  
public financial management  
executive leadership  
public policy analysis and evaluation  
local government management  
nonprofit management

Other concentrations may be developed including concentrations in other fields. These concentrations may require agreement between the Department of Political Science and Public Administration and other departments or schools at VCU such as Criminal Justice, Economics, Gerontology, Social Work, Urban Studies and Planning, Business and Health Administration.

### Accelerated B.A./M.P.A. Program

This program permits selected students to earn the B.A. and M.P.A. in a minimum of five years, by taking certain master's level courses during the senior year of their undergraduate program. The program is restricted to students with strong creden-

tials and a clear interest in a career in the public or nonprofit sector. To be eligible, a student must have completed 90 credits of course work and have an overall GPA of 3.0, with a GPA of 3.3 in political science courses. The accelerated program is limited to students with a major or minor in political science. Upon being accepted into the accelerated program, a student must meet the same standards of performance as a graduate student, must maintain a 3.0 GPA and must satisfactorily complete all of the requirements for the degree, as stated in this bulletin. Students admitted to the accelerated program receive guidance from the public administration program director and the faculty coordinator of the accelerated program.

To graduate with a bachelor's degree, a student must complete 120 hours of course work. Of these credits, 33 must be in political science. Of the 33 political science credits, nine are required credits (POLI 103 U.S. Government, POLI/INTL 105 International Relations, POLI 201 Introduction to Politics). Students also must earn 12 credits in intradepartmental distribution courses with three credit hours in each of the following areas: comparative politics, international relations, political theory and methodology, and U.S. politics. The remaining 12 credits are elective courses. Students enrolled in the accelerated program may take up to six credits of graduate public administration courses in each of the final two semesters of their undergraduate course work. These courses are shared credits with the graduate program, meaning that they will be applied toward the undergraduate degree requirement and the graduate degree requirement. The graduate credit hours may be considered either intradepartmental distribution credits or elective credits. A maximum of 12 graduate credits may be taken prior to completion of the baccalaureate degree.

### **Dual degree – public administration/law**

The dual degree program is designed to provide its graduates with two degrees — master of public administration and juris doctor — attesting to competency in both public administration and law. This competency is applicable to areas of practice drawing upon knowledge and skills from each of these fields. The program brings together persons interested in both the broader aspects of public policy and government affairs, and the law. It also brings together

two fields that require complimentary knowledge and skills which may be directed toward solving problems that are associated with the affairs of the government and nonprofit sectors. This integration of education in public administration and law draws on the contributions that each discipline can make to a professional knowledge base for practice in both fields.

Students who are accepted into the dual degree program are permitted to apply 12 credit hours of work in the master of public administration program toward meeting the graduation requirements in the T.C. Williams School of Law, and up to 12 credit hours of work in the T.C. Williams Law School toward meeting the graduation requirements for the master of public administration. This credit application enables participants in the dual degree program to complete the requirements for the J.D. and the M.P.A. in an estimated four years of full-time course work. Applicants for this program are required to meet admission standards of both the T.C. Williams Law School of the University of Richmond and the School of Graduate Studies and the Public Administration Program of VCU.

### **Graduate certificate in public management**

The graduate certificate in public management is a program designed to enable practitioners in government and nonprofit organizations to acquire knowledge and skills in public administration without pursuing a full master's degree. The certificate requires a total of 18 hours of graduate credits involving a mix of required and elective courses. The courses are the same as those offered to M.P.A. students. Admission to the certificate program requires the same application materials as the M.P.A. except a standardized examination is not required. Further details are available from the program office.

The graduate certificate in public management is offered in at least two locations off campus: Chesterfield County and Henrico County.

### **Graduate certificate in nonprofit management**

The certificate in nonprofit management is a post-baccalaureate program designed to enable practitioners principally in the nonprofit sector to acquire knowledge and skills in managing nonprofit organizations with-

out pursuing a full master's degree. The certificate requires a total of 15 graduate credit hours that is comprised of four courses in the Department of Political Science and Public Administration's graduate public administration program and one elective that may be taken in the department, or in another department in the university. The required courses are PADM 650 Principles of Nonprofit Management, PADM 656 Fund Development for Nonprofit Organizations, PADM 659 Financial Management for Nonprofit Organizations and PADM 661 Nonprofit Law, Governance and Ethics. Admission to the certificate program requires the same procedure used in applying for the master of public administration program, except that a standardized examination is not required. Further program details are available from the Department of Political Science and Public Administration.

### **Admission to the master's program from the certificate programs**

The Graduate Certificate in Public Management and the Graduate Certificate in Nonprofit Management are designed for persons in professional positions who require a limited number of courses in contemporary management theory and skills. However, if a student later decides to pursue the M.P.A. degree, successfully completed certificate courses may be applied toward the M.P.A. degree.

Successful completion of either certificate does not guarantee admission into the M.P.A. degree program. Furthermore, certificate students and graduates must apply separately for the M.P.A. degree, meeting the same requirements except that the 1500-word essay required for the certificates is exempted.

### **Computer competency**

Familiarity with basic microcomputer applications, including word processing and spreadsheets, is essential to successful completion of both the M.P.A. and certificate programs.

### **Graduate courses in public administration (PADM)**

**PADM 583 Effective Managerial Communications**  
Semester course; 1 lecture hour. 1 credit. Describes and explains the communications process as it applies in public organizations. Acquaints students with the theoretical basis of interpersonal communi-

cations and with applied methodologies from a managerial perspective.

#### **PADM 584 Planned Organizational Change**

Semester course; 1 lecture hour. 1 credit. Describes and explains strategies and tactics of planned organizational change. Emphasis is placed on the change process in organized situations and on various strategies and tactics the manager may employ to achieve desired change in his/her organization.

#### **PADM 585 Power, Influence, and Organizational Competence**

Semester course; 1 lecture hour. 1 credit. This course will explore the strategies and tactics of power and influence use in large-scale public organizations. A framework for use of influence strategies will be presented and tactical methodologies will be examined through case study and simulation.

#### **PADM 591 Topic Seminar**

Semester course; 3 lecture hours. 3 credits. Seminar in contemporary public administration issues.

#### **PADM 601 Principles of Public Administration**

Semester course; 3 lecture hours. 3 credits. Dynamics of governmental administration including administrative principles, decision making, communication, leadership, organizational models, and the social, economic, legal, and political milieu of administration.

#### **PADM 602 Public Administration Theory**

Semester course; 3 lecture hours. 3 credits. Examines historical and contemporary public administration theories and paradigms. Emphasizes the practical significance of such theories for both macro and micro issues in public administration.

#### **PADM 603 Politics and Economics**

Semester course; 3 lecture hours. 3 credits. Examines political and economic institutions and concepts as they affect and are affected by the practice of public administration. Topics include microeconomics and the public sector; the interrelationship between the private and public sectors; macroeconomics concepts and related institutions.

#### **PADM 604 Comparative Public Institutions**

Semester course; 3 lecture hours. 3 credits. Applies a comparative methodology to explore theories and models of public institutions in the United States and in selected developed and developing countries. Focuses on administrative structures and practices, with emphasis on the relationship between administrative practice and cultural, and political context. Institutions examined will be changed periodically to focus on interjurisdictional comparisons within the United States - at the local, state, and federal levels - as well as among other countries and the United States.

#### **PADM 605/SOCY 605 Survey Research Methods**

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 601, 602, and 608 or permission of instructor. Examines all major areas of survey research methodology including sampling, design, data collection methods, questionnaire design, data analysis, and data processing. Addresses problems specific to survey research, such as telephone interviewing, constructing large representative samples, and nonresponse rates.

#### **PADM 606 Government Management Models**

Semester course; 3 lecture hours. 3 credits. An examination of current thought and research on management theory and organizational design in government. Theory and research from diverse sources, i.e., political science, sociology, industrial psychology, and administrative science will be explored to provide each student with the macro conceptual framework necessary for development or refinement of effective public management skills.

#### **PADM 607 Public Human Resource Management**

Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and techniques of personnel administration and employee relations as applied in governmental units and agencies.

#### **PADM 609 Financial Management in Government**

Semester course; 3 lecture hours. 3 credits. The general concepts, principles and techniques of financial management as they are applied in governmental units and agencies. Students specializing in nonprofit organizations may substitute PADM 659 for this core course.

#### **PADM 621 Organizational Behavior and Management in Government**

Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and theories of management and organizational behavior as they relate to the administration of governmental units and agencies are dealt with in lecture, discussion, and workshop formats.

#### **PADM 622 Public Sector Budgeting**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 609. Advanced theory and practice of public agency budgeting in the decision-making process and its impact on policy-making. Topics include alternative budgeting systems, capital planning and budgeting, budget execution, budgeting analysis techniques, and revenue and expenditure forecasting.

#### **PADM 623 Research Methods for Public Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisite for PADM 624. Introduction to the scope and methods of applied research for the public sector. Focuses on problem structuring through logical methods, exploring problems through observation and other methods of data collection, analyzing and summarizing findings using both qualitative and quantitative methods.

#### **PADM 624 Quantitative Methods for Public Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 623 or permission of the instructor. Introduction to statistical methods for use in managerial decision making, policy analysis, and social science research. Descriptive and inferential statistics are explored through computations and using SPSS/PC computer software.

#### **PADM 625 Public Policy Analysis**

Semester course; 3 lecture hours. 3 credits. The examination of various methods for identifying and structuring public policy problems and issues, formulating and analyzing alternative responses, recommending policy actions for decision making, and designing and evaluating implementation plans and the means to monitor and evaluate the resulting policy outcomes.

#### **PADM 626 Intergovernmental Relations**

3 lecture hours. 3 credits. Focuses on various models of federalism and examines the pragmatic evolution of federal, state, and local intergovernmental relations in the United States. Topics include policy implementation and implications, fiscal transfers, and local government cooperation and conflict in the metropolis.

#### **PADM 627 Workshop in Policy Analysis and Evaluation**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 624 and 625 or permission of the instructor. This course is project-oriented, emphasizing practical experience in the design and conduct of policy analysis or program evaluation studies. Emphasizes political environment and client relationships.

#### **PADM 628/ENVS 628 Environmental Policy and Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. This course explores the relationship between environmental policy and its implementation within a democratic political system. It includes an investigation of basic concepts that underlie environmental policy and the difficulties encountered when attempting to apply them in a real-world setting. It also surveys a variety of tools and methodologies that may be useful in attempting to develop and implement environmental policy.

#### **PADM 630/URSP 630 Strategic Planning and Management in the Public Sector**

3 lecture hours. 3 credits. Explores the benefits and limitations of strategic planning and management in the public sector, examines approaches to strategic management, especially in terms of the role and behavior of top management, and provides an introduction to the analytic and process methods used in strategic planning and management.

#### **PADM 637 Organic Human Resources Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 607 or equivalent. An examination of current thought, research, and personnel management theory and practice in government that is person-oriented is presented in this course. Topics include rank-in-the-person personnel systems; career development, executive personnel systems; forecasting human resource needs; individual-based performance evaluation; employee assistance programs; and special emphasis program.

#### **PADM 642 Grants Management**

Semester course; 3 lecture hours. 3 credits. Principles and practices of managing federal and state funds and implementing a grant-funded program. Topics include federal grant-making process, applying for a grant, developing grant accounting systems, joint funding, disputes, appeals and remedies, and close-out procedures.

#### **PADM 650 Principles of Nonprofit Management**

Semester course; 3 lecture hours. 3 credits. Explores the history, theories and dynamics of not-for-profit organizations in the United States, with focus on organizations with local or regional services areas. Emphasizes political, legal, cultural, and constituent environments; revenue generation; decision making, communications leadership; and organizational models. Compares the mission and operations of nonprofit organizations, government organizations, and for-profit enterprises in the delivery of services.

**PADM 652 Administrative Law**

Semester course; 3 lecture hours. 3 credits. The course considers the administrative process from the perspective of rule making and decision making within the framework of public agencies. It will examine the development of the law, the use and control over administrative discretion, legislative and judicial controls over the administrative process, and remedies for improper administrative acts.

**PADM 654 Program Design and Evaluation in the Nonprofit Sector**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: PADM 623 and PADM 624, or permission of instructor. Designed to train students of nonprofit administration and management in the principles of program design and evaluation. Students will be introduced to the theoretical, organizational, political and ethical foundations of the program as well as practical research design and methodologies, both qualitative and quantitative.

**PADM 656 Fund Development for the Nonprofit Sector**

Semester course; 3 lecture hours. 3 credits. Students will study the multiple methods and sources for funding nonprofit organizations, the various methods for identifying and securing funding resources and for differentiating among them. Sources of funding that will be explored include corporate, annual, planned giving/endowment, individual, major gift, the use of special events and direct mail. Grant writing will be explored in detail. Students will examine ethical issues related to fund raising as well as the stewardship of funds received.

**PADM 657 Nonprofit Advocacy and Government Relations**

Semester course; 3 lecture hours. 3 credits. Addresses the growth and expansion of the nonprofit sector's relationship to the government sector both in the United States and internationally. Students will study historical and current partnerships with and regulation by government entities. Students also will study the nonprofit organization's advocacy role on behalf of its missions and beneficiaries, the scope of permitted lobbying and political activities, the state's role in regulating speech by nonprofits and government funding of service delivery through religious-based organizations.

**PADM 659 Financial Management for Nonprofit Organizations**

Semester course; 3 lecture hours. 3 credits. Designed to introduce students to the financial practices of nonprofit organizations including budgeting, forecasting, accounting, auditing, and debt and cash management. The general concepts, principles and techniques of financial management will be studied in the context of the political, behavioral and social environments in which the nonprofit organization operates in order to determine the best manner for achieving the objectives of the nonprofit financial administrator/manager. This course may be substituted for the core course, PADM 609 Financial Management in Government, for students pursuing a nonprofit specialization.

**PADM 660 Community Power Dynamics**

Semester course; 3 lecture hours. 3 credits. Examination of the location of power in the American community, operational concepts and general methodological approaches defined, empirical findings based

on various methodological approaches, conclusions on community political systems and power.

**PADM 661 Nonprofit Law, Governance and Ethics**

Semester course; 3 lecture hours. 3 credits. Examines fundamental governance issues in nonprofit corporations with a focus on boards of trustees and their fiduciary responsibilities as established by law as well as moral imperatives stemming from their actions on behalf of the public interest. The ethical dimensions of work in nonprofit organizations are explored with specific emphasis on risk management, tax liability and human resource management.

**PADM 662 Advanced Topics in Revenue and Taxation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ECON 616 or permission of instructor. An advanced examination of governmental revenue and taxation policies, tax incidence, and alternative funding techniques.

**PADM 664 Local Government Administration**

Semester course; 3 lecture hours. 3 credits. An intensive examination of the major functional responsibilities with a special emphasis on the organization, standards, operational imperatives, interrelationship with other functions, and special management problems at the local level, including small and rural jurisdictions.

**PADM 670 Advanced Public Financial Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: PADM 609, ECON 616, or permission of the department. Brings together specialty aspects of public financial management such as economic and political implications, practical skill-building, operational financial administration issues and tactics, and accounting principles and approaches, and integrates these disparate segments of public finance. The emphasis is on policy-level implications and strategies of public financial management strategies of executive planning, analysis, and management of the financial sector of public organizations.

**PADM 675 Comparative Public Administration**

Semester course; 3 lecture hours. 3 credits. Explores methodology, theories, and models used in comparative approach to public administration, functional processes of administration in selected developing and developed countries, and role of bureaucracy in development and nation building.

**PADM 680 Executive Leadership Seminar**

Semester course; 3 lecture hours. 3 credits. Explores aspects of current interest in leadership style, skills, and roles. This course allows participants to explore areas of personal interest in contemporary public management leadership theory and practice and to share findings in seminar format.

**PADM 681 Governmental Administrative Decision Making Processes**

Semester course; 3 lecture hours. 3 credits. Identification of alternative decision making processes in public sector management environments. Choosing the proper method of the appropriate management-level theory and method of controlling administrative decisions within governmental organizations. Dealing with political, budgetary, and personal constraints in achieving organizational goals.

**PADM 682 Advanced Public Human Resources Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: PADM 607 or equivalent. Public personnel management is analyzed in process and systems perspectives, with specific emphasis on the interrelatedness of discrete system components with other systems. Attention is given to the integration of personnel elements through the development of feedback systems, positive and negative impacts' analyses, and personnel policy development and implementation.

**PADM 683/PHIL 683 Administrative Ethics**

Semester course; 2 or 3 lecture hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

**PADM 689 Seminar in Public Administration: Integration of Theory and Practice**

Semester course; 3 lecture hours. 3 credits. Integration of public management and administration theory and practice; goal setting for professional growth and approaches to life long continuing self-development; integration of theory, models, knowledge, skills, behaviors, values, ethics, and philosophy of public management and administration. This is a capstone, required course for M.P.A. students.

**PADM 690 Reading Seminar**

3 credits. Prerequisites: 24 credits in public administration or permission of instructor. A reading and writing intensive Internet course which may be taken in lieu of PADM 689. Students will read up to 15 newly published titles in public administration and related fields, write reviews of each and post them on the course Web site forum for peer review and critique.

**PADM 691 Topics in Public Administration**

Semester course; 1, 2, or 3 lecture hours. Variable credit. Course may be repeated with different topics as approved. Prerequisite: Permission of instructor. An in-depth study of a selected topic in public administration. See the Schedule of Classes for specific topic to be offered each semester.

**PADM 693 Public Administration Practicum**

3 credits. A professional internship in public service for those students without significant professional-level experience in a public agency.

**PADM 697 Directed Research in Public Administration**

Semester course; 1-6 credits. Prerequisite: Permission of instructor. Independent research into public administration problems, issues, applications, and theories related to student's field of concentration.

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**Department of Psychology**


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Allison, Kevin, Associate Professor

Ph.D. DePaul University

Adolescent development, African-American youth and families.

- Auerbach, Stephen M., Professor  
Ph.D. Florida State University  
Stress and coping theory and research; stress management in behavioral medicine and law enforcement settings and with the elderly.
- Belgrave, Faye Z., Professor  
Ph.D. University of Maryland  
Minority populations, disabilities, HIV prevention and education, substance abuse.
- Danish, Steven J., Professor and Director, Life Skills Center  
Ph.D. Michigan State University  
Health and sports psychology, promotion and enhancement of competence, prevention of substance abuse.
- Eisenberg, Thomas, Associate Professor  
Ph.D. McMaster University  
Behavior of pharmacology of nicotine and the development of effective drug abuse treatments.
- Farrell, Albert D., Professor  
Ph.D. Purdue University  
Behavioral assessment, behavior therapy, social skills training, computer applications in mental health.
- Forsyth, Donelson R., Professor and Director of the Social Psychology Division of the Doctoral Program in General Psychology  
Ph.D. University of Florida  
Social psychology, attitudes and social cognition, group processes.
- Fries, Elizabeth A., Associate Professor (Massey Cancer Center)\*  
Ph.D. University of Washington  
Health psychology, community intervention, smoking, diet.
- Garner, Pamela W., Associate Professor  
Ph.D. Texas A&M University  
Emotional and social competence, mother/child interactions, poverty and child development.
- Gramling, Sandra E., Associate Professor  
Ph.D. University of Mississippi  
Behavioral medicine, psychophysiology, behavior therapy, psychopharmacology.
- Hamm, Robert J., Professor and Director of the Biopsychology Division of the Doctoral Program in General Psychology  
Ph.D. Southern Illinois University  
Neuronal trauma, stress reactions, animal behavior.
- Harkins, Stephen W., Professor (Gerontology)\*  
Ph.D. University of North Carolina  
Pain and age, memory changes with age, evoked potentials.
- Hartnett, John J., Associate Professor  
Ph.D. Wayne State University  
Social-industrial psychology, person perception, job satisfaction, selection, classification.
- Holmes, Clarissa S., Professor  
Ph.D. University of Arkansas  
Child behavioral medicine, childhood diabetes.
- Howard, Catherine W., Associate Professor and Director, Office of Community Programs  
Ph.D. Pennsylvania State University  
Life span development with emphasis on adolescence, family relations, prevention programs for at-risk youth.
- Ingram, Kathleen M., Associate Professor  
Ph.D. Ohio State University  
Stress, coping and well-being, e.g., HIV patients, homeless women, psychology of women.
- Kliwer, Wendy, Associate Professor  
Ph.D. University of California at Irvine  
Parental influence on children's use of coping strategies for coping with normative and stressful situations in elementary school years.
- Leahy, Thomas H., Professor  
Ph.D. University of Illinois  
History and philosophy of psychology; cognitive science, sociobiology.
- Mahoney, John M., Associate Professor  
Ph.D. State University of New York at Buffalo  
Social psychology, values, individual differences.
- Mazzeo, Suzanne, Assistant Professor  
Ph.D. University of Illinois  
Counseling psychology, eating disorders, obesity, health behavior change.
- McCreary, Micah, Associate Professor  
Ph.D. Virginia Commonwealth University  
Family issues with African-Americans, African-American males, adolescent and spiritual stress and coping.
- McCullough, James P., Professor  
Ph.D. University of Georgia  
Cognitive-behavior psychotherapy with adults, research with early and late onset characterological dysthymia, N=1 methodology.
- Meyer, Aleta, Associate Professor  
Ph.D. Pennsylvania State University  
Community psychology, at-risk youth.
- Myers, Barbara J., Associate Professor, Director of Graduate Studies in Psychology and Director of the Doctorate Developmental Psychology Division  
Ph.D. Temple University  
Infancy and early childhood, social development of disabled and at-risk children.
- Parham, Iris A., Professor (Gerontology)\*  
Ph.D. University of Southern California  
Psychology of aging, developmental psychology.
- Porter, Joseph H., Professor  
Ph.D. University of Georgia  
Biopsychology, animal learning and behavior, behavioral pharmacology.
- Shivy, Victoria A., Assistant Professor  
Ph.D. State University of New York at Albany  
Psychological assessment, vocations, research design and methodology.
- Southam-Gerow, Michael, Assistant Professor  
Ph.D. Temple University  
Child and adolescent anxiety disorders, cognitive/behavior therapy, child psychopathology.
- Stern, Marilyn, Professor and Director of the Doctoral Program in Counseling Psychology  
Ph.D. State University of New York at Buffalo  
Child, prenatal and birth issues, adolescent adjustment, conflict resolution.
- Stolberg, Arnold L., Professor  
Ph.D. University of South Florida  
Clinical child and community psychology; prevention of child psychopathology, divorce, and child adjustment.
- Svikis, Dace S., Associate Professor  
Ph.D. University of Minnesota  
Psychopharmacology, behavior genetics, intervention.
- Vrana, Scott R., Associate Professor and Director of the Doctoral Program in Clinical Psychology  
Ph.D. University of Florida  
Anxiety disorders, emotion, psychophysiology.
- Wilkes, Susan, Assistant Professor and Director, Workplace Initiatives  
Ph.D. Virginia Commonwealth University, Center for Psychological Services and Development.
- Worthington, Everett L., Professor and Department Chair  
Ph.D. University of Missouri  
Marriage and family, religious counseling, theories and methods of counseling.

#### **Emeriti faculty**

- Bailey, Kent G.  
Erickson, Marilyn T.  
Groman, William D.  
Kiesler, Donald J.  
Strong, Stanley R.  
Tipton, Robert M.

#### **Affiliate faculty**

- Alexander, Donna, Research Professor, Adjunct Professor  
Ph.D.
- Allison, Scott T., Research Professor, University of Richmond  
Ph.D.
- Anderson, Craig, Assistant Clinical Professor, University Counseling Services  
Ph.D.
- Ax, Robert K., Assistant Clinical Professor, Federal Correctional Institution, U.S. Department of Justice  
Ph.D.
- Balster, Robert L., Research Professor, Department of Pharmacology and Toxicology  
Ph.D.
- Beardsley, Patrick M., Associate Research Professor, Department of Pharmacology and Toxicology  
Ph.D.
- Berry, Jack W., Research Assistant  
Ph.D.
- Blackmer, Dana R., Assistant Clinical Professor, Henrico County Mental Health Services  
Ph.D.
- Bovbjerg, Viktor E., Assistant Research Professor, University of Virginia  
Ph.D.
- Bressler, Joy G., Assistant Clinical Professor, University Counseling Services  
ACSW, LCSW
- Buczek, Teresa A., Assistant Clinical Professor, Private Practice  
Ph.D.
- Bullock, James H., Assistant Clinical Professor, Private Practice  
Psy.D.

- Burke, James, Research Assistant, Director of Workplace Initiative  
Ph.D.
- Cassel, J. Brian, Assistant Research Professor, Oncology Administration, MCVH  
Ph.D.
- Casson, Mort A., Assistant Clinical Professor, Private Practice  
Ph.D.
- Castaldi, Josie, Assistant Clinical Professor, Children's Hospital  
Ph.D.
- Cobb, Eloise, Assistant Clinical Professor, Child Development Services  
Ph.D.
- Cohen, Robert, Clinical Professor, Virginia Treatment Center  
Ph.D.
- Coogle, Constance L., Assistant Research Professor, Virginia Center on Aging  
Ph.D.
- Corcoran, Jean, Collateral Professor  
Ph.D. Virginia Commonwealth University
- Crow, Frank, Assistant Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center  
Ph.D.
- Doyle, Daniel, Assistant Clinical Professor, Private Practice  
Ph.D.
- Eberly, Bruce, Assistant Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center  
Ph.D.
- Eberly, Carole, Assistant Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center  
Ph.D.
- Ehrmantraut, John E., Assistant Clinical Professor, Private Practice  
Ed.D.
- Falk, Robert S., Assistant Clinical Professor, Private Practice  
Ph.D.
- Farnham, Carole, Clinical Psychologist, Central State, Petersburg, Va.  
Ph.D.
- Farrington, Frank H., Associate Research Professor, Department of Pediatric Dentistry  
D.D.S.
- Fisher, Robert E., Assistant Clinical Professor, Community Preparation Program, Eastern State Hospital  
Ph.D.
- Forssmann-Falck, Renate, Clinical Professor, Center for Psychological Services and Development, Department of Psychology  
M.D.
- Gottfredson, Stephen D., Clinical Professor and Dean, College of Humanities and Sciences  
Ph.D.
- Green, Robert G., Research Professor, School of Social Work  
Ph.D.
- Greenberg, Bryon, Clinical Psychologist, Central State, Petersburg, Va.  
Ph.D.
- Gruszkos, John R., Assistant Clinical Professor, Private Practice  
Ph.D.
- Gullotta, Frank, Assistant Clinical Professor, Philip Morris, U.S.A.  
Ph.D.
- Hagan, Leigh D., Assistant Clinical Professor, Private Practice  
Ph.D.
- Haller, Deborah L., Associate Research Professor, Division of Substance Abuse Medicine  
Ph.D.
- Hanna, Aura, Assistant Research Professor  
Ph.D.
- Hess, David, Assistant Research Professor, Physical Medicine and Rehabilitation  
Ph.D.
- Horvath, Paula K., Associate Research Professor, Department of Internal Medicine-Substance Abuse  
Ph.D.
- Ito, Michael S., Assistant Clinical Professor, Psychology Department, Eastern State Hospital  
Psy.D.
- Jackson, Tammy, Consultant and Trainer Workplace Initiatives  
B.A.
- Kelly, Timothy A., Clinical Professor  
Ph.D.
- Kendrick, Michelle M., Assistant Clinical Professor  
Ph.D.
- Knisely, Janet, Assistant Research Professor, Department of Psychiatry  
Ph.D.
- Koch, J. Randy, Assistant Human Resources Professor, Department of Mental Health, Mental Retardation and Substance Abuse Services, Richmond, Va.  
Ph.D.
- Kornstein, Susan B., Assistant Clinical Professor, Department of Psychiatry  
M.D.
- Kreutzer, Jeffrey S., Clinical Professor, Department of Rehabilitation Medicine  
Ph.D.
- Laird, Steven P., Assistant Clinical Professor, Department of Psychology, McGuire Veterans Administration Medical Center  
Ph.D.
- Laskin, Daniel, Clinical Professor, Department of Oral and Maxillofacial Surgery  
Ph.D.
- Levy, Leon, Research Professor, Department of Psychology  
Ph.D.
- Lichtman, Aron, Research Associate Professor, Department of Pharmacology and Toxicology  
Ph.D. University of Maryland
- Loos, Mary Elizabeth, Collateral Instructor  
Ph.D. University of Maryland
- Martelli, Michael F., Assistant Clinical Professor, Medical Psychology, Sheltering Arms Hospital  
Ph.D.
- Matthies, Brigitte, Assistant Clinical Professor, Department of Physical Medicine and Rehabilitation  
Ph.D.
- May, James, Associate Clinical Professor, Department of Mental Health, Mental Retardation and Substance Abuse  
Ph.D.
- McDonough, James J., Assistant Research Professor, Criminal Justice Research Center  
Ph.D.
- McMahon, Brian T., Professor and Chair, Department of Rehabilitative Counseling  
Ph.D.
- Moore, Donna, Clinical Psychologist, Central State, Petersburg, Va.  
Ph.D.
- Moss, Jon, Assistant Clinical Professor, Richmond Mental Health Center  
Ph.D.
- Neale, Michael C., Associate Research Professor, Department of Psychiatry  
Ph.D.
- Nicholson, Jane A., Assistant Clinical Professor, Eastern State Hospital  
Ph.D.
- Oswald, Donald P., Assistant Clinical Professor, Department of Psychiatry  
Ph.D.
- Peck III, Edward A., Associate Research Professor, Neuropsychological Services of Virginia, Inc.  
Ph.D.
- Peoples, Napoleon L., Assistant Clinical Professor, University Counseling Center  
Ph.D.
- Plybon, Laura, Research Associate  
Ph.D.
- Porter, Mary Christine, Collateral Instructor  
Ph.D. University of New Hampshire
- Prescott, Carol, Associate Professor of Psychiatry, Department of Psychiatry, Virginia Commonwealth University  
Ph.D.
- Raines, Shanan R., Assistant Clinical Professor, Private Practice  
Ph.D.
- Reif, Thomas F., Assistant Clinical Professor, Private Practice  
Ph.D.
- Resnick, Robert J., Clinical Professor, Private Practice  
Ph.D.
- Rice, Lori, Assistant Research Professor  
Ph.D.
- Riley, William T., Associate Research Professor, Department of Psychiatry  
Ph.D.
- Schulman, Martha S., Assistant Clinical Professor, McGuire Veterans Administration Medical Center  
Ph.D.
- Shaw, Monica, Assistant Clinical Professor  
Ph.D.
- Silberg, Judy L., Assistant Research Professor, Department of Human Genetics  
Ph.D.

Silverman, Joel J., Clinical Professor, Department of Psychiatry  
M.D.

Simpson, Adelaide W., Assistant Clinical Professor, Private Practice  
Ph.D.

Singh, Nirbhay N., Clinical Professor, Department of Psychiatry  
Ph.D.

Smith, Brian, Assistant Professor,  
Ph.D.

Streicher, Hellen, Assistant Professor  
Ph.D.

Sullivan, Terri N., Assistant Professor  
Ph.D.

Taylor, R. Dean, Associate Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center  
Ph.D.

Twente, Steven, Assistant Clinical Professor  
Ph.D.

Van Slyck, Michael R., Collateral Associate Professor  
Ph.D. State University of New York at Buffalo

Waite, Dennis E., Assistant Clinical Professor, Bon Air Juvenile Correctional Center  
Ph.D.

Weaver, Debra A., Assistant Clinical Professor  
Ph.D.

Weaver, Michael, Medical Monitor, Internal Medicine Substance Abuse  
M.D.

Weinberger, Gerald, Assistant Clinical Professor, Private Practice  
Ph.D.

Weinborn, Michael, Clinical Psychologist, Central State, Petersburg, Va.  
Ph.D.

Wiley, Jenny L., Associate Clinical Professor, Department of Pharmacology  
Ph.D.

Williams, Larry, Research Professor, Department of Management  
Ph.D.

Wood, Joan B., Associate Research Professor, Department of Gerontology  
Ph.D.

Wright, Sandra, Assistant Research Professor, Joint Legislative Audit and Review Committee  
Ph.D.

Zyzniewski, Linda E., Collateral Assistant Professor  
Ph.D. Virginia Commonwealth University

\* Department in parentheses indicates joint appointment.

The Department of Psychology offers instruction in clinical, counseling and general psychology leading to the doctor of philosophy degree. Students in all three programs are educated first as psychologists and then helped to develop competence in a more specialized area relevant to their scholarly and professional objectives. In

addition, special training and experience in college teaching is available.

The doctoral programs in clinical and counseling psychology are accredited by the American Psychological Association. The programs emphasize the scientist-practitioner model and prepare students for research and service in professional psychology, including positions in university academic and medical school departments, counseling centers, mental health agencies and hospitals, physical health facilities and other organizational settings.

The clinical psychology program offers general tracks in adult, child and behavioral health clinical psychology as well as specialized institutes in unipolar mood disorders, behavioral health, and family and the law.

The counseling psychology program emphasizes the enhancement of life skills and personal competence. Typical specializations include disease prevention and health promotion, career and life planning, work with college students, community outreach, interpersonal processes, group counseling, marriage and family counseling, multiculturalism and sport psychology.

The program in general psychology prepares students for basic or applied research and includes three divisions: biopsychology, developmental and social psychology.

The Center for Psychological Services and Development, a campus-based community service agency operated by the department, provides training opportunities for graduate students in all departmental programs, including practicum and research training for graduate students in the clinical and counseling psychology programs. A wide variety of other on- and off-campus practicum placements also are available.

The department maintains laboratory facilities for research in the areas of behavioral assessment, behavioral medicine, developmental, learning, behavioral pharmacology, psychophysiology, psychotherapy process, social perception, social influence and group dynamics. Opportunities for field research also are available in a variety of settings.

A collection of current journals and books in psychology is housed in the James Branch Cabell Library on the Academic Campus and in the Tompkins-McCaw Library on the MCV Campus.

Teaching assistantships, research assistantships and paid practicum placements are available.

## Admission requirements

In addition to the general requirements for admission to the graduate programs in the School of Graduate Studies (the Graduate Studies at VCU chapter of this bulletin), the following requirements represent the minimum acceptable standards for admission:

- graduation with a bachelor's degree from an accredited college or university, but not necessarily with a major in psychology
- 18 semester hours of undergraduate course work in psychology is the minimal, but not the optimal, number of hours for an applicant to be considered for admission. Included must be each of the following courses: general psychology, statistics and experimental psychology. Exceptionally well-qualified applicants with less than a major in psychology, or applicants whose undergraduate work is considered outdated by the admissions committee, may be advised to complete some additional undergraduate courses at the beginning of their graduate study program.
- an undergraduate record indicating superior academic potential
- satisfactory performance on the GRE
- three letters of recommendation from previous instructors
- a personal interview may be required at the discretion of the department

The number of students who can be admitted is limited by the facilities and staff available. All applicants will be notified of the decision made. The screening process may begin as early as Jan. 1. First offers of admission are made by April 1. By June 1, after other offers to alternates have been made and final acceptances by students have been received, admissions may be closed. The application deadline is Jan. 5 for the clinical and counseling programs, Feb. 15 for the general programs (biopsychology, developmental, and social). Applicants to the Psychology Program should specify to which of the three divisions they are applying (i.e., biopsychology, developmental or social).

Transfer credits for graduate work at other institutions will be evaluated after the completion of nine semester hours in the department.

## Degree requirements

The following requirements are in addition to those described for the graduate programs in the School of Graduate Studies



(the Graduate Studies at VCU chapter of this bulletin) and College of Humanities and Sciences (beginning of the College of Humanities and Sciences Graduate Programs chapter of this bulletin).

All students are required to complete a core curriculum of 15 credits (or to have completed its equivalent for students entering with a master's degree).

Students who receive grades of "B" or better in each of the department core courses are considered to have fulfilled the university requirements of a master's level comprehensive examination and will then officially be considered candidates for the master of science degree. Students who receive grades of "C" or lower in two or more department core courses will have failed the comprehensive examination and will be dismissed automatically from the program. Students who receive a grade of "C" or lower in one of the department core courses must either (a) satisfactorily complete a re-examination of the material covered in the course within one semester following the receipt of the grade (this re-examination is to be arranged and evaluated by the course instructor); or (b) repeat the course for credit the next time it is offered and receive a grade of "B" or better. Regardless of which of these approaches is chosen, the students will be given only one opportunity to demonstrate that they have mastered the course material. Students who either fail the reexamination or repeat the course and receive a grade of "C" or lower will have failed the comprehensive examination and will be dismissed from the program.

Additional courses and training experiences will be determined in consultation with and subject to the approval of the student's faculty adviser and graduate program committee.

Receipt of a grade of "C" or lower in two courses, or grades of "C" or lower in more than six credits of psychology courses, constitutes automatic dismissal of a student from the program.

All students are required to complete a master's thesis and to defend it successfully in an oral examination. Ideally, the thesis should be publishable as a piece of research and make a contribution to the field of psychology. Students who have previously completed a master's thesis in psychology at another university may have the thesis requirement waived if the thesis is accepted by their graduate program committee.

The residence requirement for the master's degree is 18 hours, nine in each of two consecutive semesters. Completion of the degree usually requires four semesters. At least six semester credits in PSYC 798 Master's Thesis must be completed, and no more than six can be counted toward the M.S. degree.

Students are obligated to request, in writing from their program committees, continuation of study beyond the master's degree and approval of their doctoral plan of study. Application from a student for continuation beyond the master's level will be evaluated by the appropriate program committee after completion of all requirements for the master's degree. The program committee reviews the student's request and approves or disapproves the request.

The student must pass a written preliminary examination to become a doctoral candidate. Students are required to complete this requirement prior to defense of their dissertations and prior to leaving on internship for students in the clinical and counseling psychology programs.

With the consent of the program committee, doctoral students may design a minor consisting of courses in departments other than psychology or courses in an area of psychology other than major.

Both the clinical and counseling psychology programs require completion of applied practica and a one-year predoctoral internship approved by the program committee. Research practica are required by all programs. Practicum credit will vary depending on the program. Internship will be one-half credit per semester.

A dissertation requiring the planning, completion and oral defense of an original research project is an integral part of the doctoral program. At least 12 semester credits in PSYC 898 Doctoral Dissertation must be completed, and no more than 12 can be counted toward the Ph.D. degree.

Completion of the entire program usually requires four to six years (including the internship year for students in the clinical and counseling programs). Candidates must complete all requirements for the Ph.D. degree within a seven-year period from the date of admission to the graduate program. In some cases, specific programs and divisions may have requirements in addition to those stated here.

A more detailed description of the requirements for each of the graduate programs is included in the Department of

Psychology's Graduate Student Handbook which is provided to each incoming graduate student. Visit the Web site for more information: <http://www.has.vcu.edu/psy>.

## Curriculum requirements

### Department core

- PSYC 619 Learning and Cognition
- PSYC 620 Design and Analysis of Psychological Research
- PSYC 621 Statistics in Psychological Research
- PSYC 617 Sensation and Perception
- or PSYC 629 Biological Basis of Behavior
- Ethics: choose one of the following:
  - a. PSYC 675 Ethical Principles of Psychology (two credits) or
  - b. GRTY 606 Aging and Human Values (three credits) or
  - c. MICR 510 Scientific Integrity (one credit)

### Clinical Psychology Program

- Successful completion of Clinical Psychology Program core courses (PSYC 616, 627, 643, 644, 645 or 649, 650, 652 or 667)
- Successful completion of 22 credit hours of clinical practicum (PSYC 694) and one credit hour of research practicum (PSYC 690). Up to six credit hours may be waived depending on experience and ability
- Successful completion of one three-credit assessment elective (e.g., PSYC 626, 641, 645, 646, 647, 648, 649)
- Successful completion of one three-credit therapy/intervention elective (e.g., PSYC 623, 624, 652, 653, 654, 656, 660, 666, 667, 668, 669, 670)
- Students need to meet a social aspects of behavior breadth requirement by successfully completing PSYC 630, PSYC 633 or another graduate course in social aspects of behavior approved by the clinical faculty
- Students need to meet a cultural/individual diversity breadth requirement by successfully passing PSYC 677 or another graduate course in cultural/individual diversity approved by the clinical faculty
- Successful completion of three one-half credit consecutive semesters of an approved predoctoral internship, PSYC 696
- A minimum of 87.5 semester hours of approved courses beyond the baccalaureate degree
- Students should, if planning to practice clinical psychology, attend to the current licensure requirements of the state in which they plan to practice

### Counseling Psychology Program

- Counseling Psychology Program core curriculum successfully completed (PSYC 608, 611, 616, 623, 625, 643, 644, 645, 651, 655, 660/or approved health psychology elective, 676, and 695).
- Successful completion of 10 credit hours of counseling practicum (PSYC 693) and one credit hour of research practicum (PSYC 690).
- Successful completion of other required courses, including PSYC 603 or 633 or other approved developmental course.
- Successful completion of three one-half credit consecutive semesters of an approved predoctoral internship (PSYC 696).
- A minimum of 90.5 credit hours of approved courses beyond the baccalaureate degree.

## General Psychology Program

- General Psychology Program doctoral courses completed (PSYC 638; three hours of 671 and/or 690; and 602 or 603 or 605)
- Successful completion of one of the following specialized division curricula:

### Biopsychology division curriculum

PSYC 629, PSYC 617, PSYC 639 and three courses from the following list: PSYC 612, PSYC 622, PHTX 632, PHIS 501, PHTX 633 and approved special topics courses (PSYC 691).

### Developmental division curriculum

PSYC 603, PSYC 636, and PSYC 671 or PSYC 690, and three or more "age-stage" courses chosen from (other courses from this list are included in the Electives list): PSYC 691 Infant Behavior and Development, PSYC 691 Early and Middle Childhood, PSYC 628 Psychology of Adolescent Development, or PSYC 602 Psychology of Aging. One graduate course in social psychology is required. Students specializing in life span development and gerontology must take the following set of gerontology courses in addition to other developmental and core requirements — these courses will result in a Certificate in Aging from the Department of Gerontology:

GRTY 601 Biological and Physiological Aging

GRTY 602 Psychology of Aging

GRTY 605 Social Gerontology

GRTY 692 Independent Study (two credits)

Six additional hours of gerontology electives, chosen with adviser

#### Electives

Students, working with faculty, should choose additional courses as needed for their career goals; the number of electives taken is optional, and other courses not on this list may qualify, provided students work in consultation with faculty advisers:

GRTY 601 Biological and Physiological Aging

GRTY 602 Psychology of Aging

GRTY 605 Social Gerontology

HGEN 620 Introduction to Principles of Human Behavioral Genetics

PSYC 613 Cognitive Development

PSYC/GRTY 635 Psychology of Health and Health Care in the Elderly

PSYC 638 Evolution of Psychological Systems

PSYC 644 Individual Tests of Intelligence

PSYC 645 Clinical Assessment of Child Disorders

PSYC/GRTY 641 Survey of Psychological

Assessment and Treatment of the Older Adult

PSYC 655 Community Interventions: Development, Implementation and Evaluation

PSYC 659 Seminar in Consultation Psychology

PSYC 660 Health Psychology

PSYC 691 Parenting or other special topics courses as available

### Social division curriculum

PSYC 630, PSYC 632 and three courses from the following list: PSYC 604, PSYC 610, PSYC 633 and PSYC 634.

- A minimum of 72 semester hours of approved courses beyond the baccalaureate degree

## Graduate courses in psychology (PSYC)

### PSYC 601 Foundations of Applied Developmental Psychology

Semester course; 3 lecture/seminar hours. 3 credits.

Prerequisites: Graduate standing in the psychology program or permission of the instructor. An introduction to developmental research and theory on applied research topics. Topics include ethical issues in applied developmental science, culture, ethnicity and child development, poverty, child abuse, nontraditional families, childcare, family instability, early childhood intervention, and parenting.

### PSYC 602/GRTY 602 Psychology of Aging

Semester course; 3 seminar hours. 3 credits.

Prerequisite: Permission of instructor. Psychological adjustment in late life; special emphasis on personality, cognitive, and emotional development; life crises associated with the aging process. Students must complete social sciences research methods before taking this course.

### PSYC 603 Developmental Processes

Semester course; 3 lecture hours. 3 credits. Cognitive, social, personality, and behavioral development across the life span is considered, with special attention to theories of development.

### PSYC 604 Social Psychology of Business and Industry

Semester course; 3 lecture hours. 3 credits. The theme is the influence of organizational structure on behavior. Topics will include motivation, attitudes, job satisfaction, morale, leadership, and supervision.

### PSYC 605 Social Development

Semester course; 3 lecture-seminar hours. 3 credits.

Prerequisite: PSYC 603 or permission of instructor. The development of social relations, focusing primarily on infancy and childhood, but also considering adulthood and aging. Attachment, parent-child interaction, peers, siblings, aggression, sex-roles, cultural determinants, deprivation and remediation, social cognition, adulthood changes, parenthood. Critical evaluation of theory and current research.

### PSYC 606 Early and Middle Childhood Development

Semester course; 3 lecture/seminar hours. 3 credits.

Prerequisites: Graduate standing in the psychology program or permission of the instructor. An introduction to theory and research on children from toddlerhood to middle childhood. Topics include language, intelligence, early education, schooling, social cognition, theory of mind, attachment, social competence, emotions and socialization.

### PSYC 607/EDUS 607 Advanced Educational Psychology

Semester course; 3 lecture hours. 3 credits.

Application of the principles of psychology to the teaching-learning process. Discussion will focus on the comprehensive development of individual learning experiences and educational programs from the point of view of the educator and the administrator.

### PSYC 608 Research in Counseling Psychology

Semester course; 3 lecture/seminar hours. 3 credit hours. Prerequisite: Graduate standing in the counsel-

ing psychology program or permission of counseling committee. An introduction to the theoretical, procedural, methodological and ethical issues encountered during the conduct of empirical research in counseling psychology. Topics include the empirical analysis of such mainstream counseling research activities as assessment, interventions, consultation, supervision, training, psychosocial factors in health and prevention, career development, the study of diversity and underrepresented populations, and professional issues in counseling psychology.

### PSYC 609 Contemporary Issues in Clinical Psychology

Semester course; 3 lecture-seminar hours. 3 credits.

Prerequisites: First-year graduate standing in clinical psychology or permission of the instructor. Informs first-year doctoral students of the philosophy behind the training model and the requirements of the doctoral program in clinical psychology in the context of the current status of contemporary issues in the field. Includes coverage of traditional and innovative training models, research issues, the role of assessment and psychotherapy in clinical psychology, the medical vs. the behavioral model of psychopathology, relations with other mental health professions, professional issues such as licensure and credentialing, and malpractice.

### PSYC 610 Attitude Theory and Research

Semester course; 3 lecture hours. 3 credits. Theory and research in attitudes. Attitude formation and change, including cognitive consistency, learning and reinforcement, social judgment, and functional theories.

### PSYC 611 Contemporary Developments in Counseling Psychology

Semester course; 3 lecture hours. 3 credits.

Prerequisite: Permission of instructor. Contemporary issues, problems, and research related to the practice of counseling psychology; their importance in developing a professional identity and sensitivity to major developments in the field; history, present status, and future directions in the field of counseling psychology.

### PSYC 612 Seminar in Motivation

Semester course; 3 lecture hours. 3 credits. A survey of some theoretical views of motivation. Biological, cultural personality, and learning theories of motivation will be covered. Theoretical positions will be related to current empirical findings.

### PSYC 613 Cognitive Development

Semester course; 3 lecture-discussion hours. 3 credits.

Prerequisite: Graduate standing in psychology or permission of instructor. The development of the intellectual processes, including reasoning, memory, imagery, and knowledge. Special attention will be given to theories of cognitive growth. Although the focus will be on child cognitive developments, consideration of life-span issues will be included.

### PSYC 614 Infant Growth and Development

Semester course; 3 seminar hours. 3 credits.

Prerequisite: PSYC 603 or permission of instructor.

Sensory and behavioral capacities of the infant; cognitive, social, and emotional development in the first two years of life, with emphasis on the effects of early experience on function later in life. Consideration of the special problems associated with infant research and intervention programs.

**PSYC 615/GRTY 615 Aging and Mental Disorders**

Semester course; 3 lecture hours. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status, and intervention strategies that have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises; psychology of health, illness, and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group, and family therapy, behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

**PSYC 616 Psychopathology**

Semester course; variable hours. 1 or 3 credits. May be taken only one time for credit toward degree. Prerequisite: Permission of instructor. Clinical and experimental contributions to the field of psychopathology, with particular attention to the roles of learning and motivation in the development of behavior disorders.

**PSYC 617 Sensation and Perception**

Semester course; 3 lecture hours. 3 credits. The major phenomena of vision, audition, olfaction, gustation, and the skin senses. Psychophysics and the effects of sensory deficits. The relationship of variations in environmental energy to the psychological reactions of sensing and perceiving.

**PSYC 618 Seminar in Personality**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A detailed exploration of various approaches in personality. Contemporary issues in personality theory.

**PSYC 619 Learning and Cognition**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Covers principles and theories of learning and cognitive psychology from simple associative learning through memory, comprehension, thinking, and social behavior.

**PSYC 620 Design and Analysis of Psychological Research**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Undergraduate course in basic statistics or permission of instructor. An introduction to research design in psychology (e.g., logic behind various research designs, typical research problems). Review of principles of hypothesis testing, general linear model, analysis of variance including factorial designs with special emphasis on prior and post hoc comparisons, repeated-measures designs and mixed designs.

**PSYC 621 Statistics in Psychological Research**

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: PSYC 620. Extensive coverage of multiple regression/correlation analysis with applications in psychology. Survey of applications of multivariate statistical analyses in psychology.

**PSYC 622 Physiological Correlates of Emotion**

Semester course; 3 lecture-seminar hours. 3 credits. Research and theories of emotion emphasizing physiological bases, with special attention to neurological and endocrine systems. Applications to psychological functioning.

**PSYC 623 Counseling Theories and Personality**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Overview of major trends in personality theory, techniques and current research in psychotherapies as they apply to counseling psychology. Includes descriptions of some brief psychoeducation and preventive interventions and stresses accountability in outcome of all interventions.

**PSYC 624 Group Counseling and Psychotherapy**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Historical perspective. Basic dynamics and processes of therapeutic groups. Role and technique of the group facilitator. Examination of different theoretical approaches.

**PSYC 625 Career Counseling: Theory and Practice**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Review of major theories and current research in career development. Techniques of career counseling for individuals and groups. Emphasis on late adolescent, adult, and pre-retirement populations.

**PSYC 626 Single-Case Experimental Design for the Clinical Research-Practitioner**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Review of single-case design models that have utility for clinicians in evaluating their practice. Emphasis will be placed on the historical development of the field and on the main experimental design issues that are relevant to the conduct of single-case research.

**PSYC 627 Research Methods in Clinical Psychology**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: PSYC 621 and graduate standing in clinical or counseling psychology, or permission of instructor. Examines the role of research in clinical psychology and experimental design issues in psychotherapy research.

**PSYC 628 Psychology of Adolescence**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Theories and research on the social, personality, and cognitive development of adolescents. Emphasis is placed on the development of identity and relationships with family and peers, within the contexts of home, school, work, and community. Variations in development related to cultural differences will also be the focus, but atypical behavior will be explored. Normal adolescent behavior will also be addressed. Current research ideas will be examined.

**PSYC 629 Biological Basis of Behavior**

Semester course; 3 lecture hours. 3 credits. Prerequisite: An undergraduate course in physiological psychology or permission of instructor. Theory and current experimental research on the physiological and neurological concomitants of behavioral variables.

**PSYC 630 Social Psychology**

Semester course; 3 lecture-seminar hours. 3 credits. Topics include attitudes, social influence processes, person perception, affiliation and attraction, group processes, cultural influences on behavior, and conformity.

**PSYC 632 Research Methods in Social Psychology**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: PSYC 621 and 630. Epistemological, methodological, technical, and ethical problems encountered during the scientific study of social psychological phenomena. Emphasizes practical experience in theory development, hypothesis derivation, research planning, data collection, reduction and analysis, and dissemination strategies.

**PSYC 633 Group Dynamics**

Semester course; 3 lecture-seminar hours. 3 credits. Theoretical explanations and empirical research related to group formation, development, performance, and dissolution. Topics include obedience, conformity, group productivity, and leadership.

**PSYC 634 Attribution and Social Cognition**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: PSYC 630. Analysis of the perceptual and inferential processes that influence the perceiver's understanding of others' traits and characteristics. Examines theoretical perspectives and current empirical studies of the intuitive use of behavioral data in making inferences concerning the causes of actions and events and the cognitive mechanisms that structure inferences about others' qualities.

**PSYC 635 Psychology of Health and Health Care in the Elderly**

Semester course; 3 lecture hours. 3 credits. Presents health psychology models, theories, and issues relating to the etiology, course, and treatment of illness in the elderly. Covers older patient-practitioner interaction, compliance, late-life stress and illness, psychosocial issues in terminal care.

**PSYC 636 Research Methods in Developmental Psychology**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: PSYC 621. Research designs, methods, ethical issues, and problems specific to developmental psychology. Cross-sectional, longitudinal, and sequential strategies. Statistical issues, multivariate statistics, and choice of statistical designs appropriate for developmental research questions. Computer skills in organizing and analyzing data. Grant writing and scientific reporting.

**PSYC 637 Operant Behavior**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Presents an overview of the methodology, terminology, and phenomena unique to the experimental analysis of behavior. Topics include operant methodology, schedules of reinforcement, stimulus control, acquisition of behavior, conditioned reinforcement, punishment, scheduled-induced behaviors, and use of operant techniques in drug research.

**PSYC 638 The Evolution of Psychological Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Core course in student's area of specialization or permission of instructor. A survey of the development and present state of various psychological systems. Current meta-theoretical and systematic issues in psychology.

**PSYC 639 Research Methods in Biopsychology**

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Methodological, technical, and ethical problems in biopsychology. Examples are design and use of circuits in behavioral sciences, stereotaxic surgery, histology, drug procedures, research design, data collection procedures, and data analysis.

**PSYC 641/GRTY 641 Survey of Psychological Assessment and Treatment of the Older Adult**

3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual, and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstration, and classroom practice of actual treatment techniques.

**PSYC 642/GRTY 642 Practicum in Clinical Geropsychology**

3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in deinstitutionalization; possible extended placement in a particular facility.

**PSYC 643 Principles of Psychological Measurement**

Semester course; 2 lecture hours. 2 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Basic psychometric concepts to prepare the student for subsequent evaluation instruments. Origins and logic of testing, criteria for judging tests, standardization and reliability, and validity and principles of test development and construction.

**PSYC 644 Individual Tests of Intelligence**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology or permission of counseling or clinical psychology program. Examines the administration, scoring, interpretation, and research foundations of the major individual tests of intelligence. Emphasizes the Wechsler scales and the measurement of adult and child intelligence. Develops psychological report writing skills.

**PSYC 645 Assessment of Personality**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology, or permission of clinical or counseling psychology program and instructor. Examines use of objective and projective tests in assessment of personality. Emphasizes clinical interpretation of the Minnesota Multiphasic Personality Inventory (MMPI), and the administration and clinical interpretation of the Rorschach and Thematic Apperception Test (TAT). Stresses integrative report writing.

**PSYC 646 Projective Techniques**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology or permission of counseling and clinical program committee. Projective devices for the assessment of personality. Supervised administration, scoring,

interpretation, and written reports of individually administered projective personality tests.

**PSYC 647 Neuropsychological Assessment**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of instructor. Psychological assessment of brain-behavior relationships in the context of neurological or neurosurgical problems. Emphasis is on current modifications of Halstead's tests and on the Reitan-Indiana Neuropsychological Battery for younger children. Laboratory requires supervised administration, scoring, and interpretations of neuropsychological test batteries.

**PSYC 648 Behavioral Assessment of Clinical Problems**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of instructor. Development, evaluation, use, and interpretation of behavioral approaches to the assessment of clinical problems, including self-monitoring, behavioral ratings, and direct observational assessment procedures. Both existing instruments and procedures for designing new instruments will be discussed.

**PSYC 649 Clinical Assessment of Child Disorders**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: PSYC 643 and graduate standing in clinical psychology or permission of clinical program committee and instructor. Administration and interpretation of intellectual and personality assessment instruments for children. Laboratory requires supervised administration, scoring, interpretation, and written reports of these assessment instruments.

**PSYC 650 Advanced Child Psychopathology**

Semester course; variable hours. 1 or 3 credits. May be taken only one time for credit toward degree. Principal childhood behavioral abnormalities: mental retardation, psychosis, learning disabilities, speech and language problems, school-related behavioral problems, neurosis, psychosomatic disorders and juvenile delinquency. Genetic, prenatal, perinatal, postnatal and social-psychological factors related to etiology. Integration of assessment and treatment methods.

**PSYC 651 Theories of Counseling and Interviewing**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: Graduate standing in counseling or clinical psychology and permission of instructor. Introduces basic principles of interviewing as they apply to theories and practice of psychotherapy and counseling. Laboratory requires video-taping of simulated counseling/psychotherapy session, modeled and role-played interviewing situation, skill development and demonstration, and evaluative interpersonal feedback.

**PSYC 652 Child and Adolescent Psychotherapy**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of the instructor. Presents the major approaches to psychological interventions for children's and adolescents' behavioral and emotional disorders. Includes a review of empirical research evaluating the effectiveness of contemporary psychological interventions for specific disorders.

**PSYC 653 Family Counseling and Therapy**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: PSYC 616, 693 or 694, 645; or permission of instructor. Emphasizes an applied approach to family assessment and therapy. Presents theories and concepts of major approaches to family therapy and general systems issues. Emphasizes techniques of family therapy. Involves participants in role playing, demonstration, films, and case discussion.

**PSYC 654 Marriage Counseling and Therapy: Theory, Practice and Research**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology, or permission of instructor. Surveys major theories of marital interaction and counseling (as distinct from family counseling). Students perform assessment batteries and interviews and practice selected techniques of marital counseling. Participation in a research project, either library, field, or experimental research, is required.

**PSYC 655 Community Interventions: Development, Implementation, and Evaluation**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Provides an understanding of the concepts community, prevention, and promotion and how interventions that adopt such a perspective differ from traditional psychotherapeutic interventions in their goals and targets. Explores how to critically evaluate research related to community and preventive interventions. Emphasizes consideration of issues in designing, implementing, and evaluating community intervention projects. Provides opportunities to conduct part of the intervention in a community setting.

**PSYC 656 Structured Training Groups**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Permission of instructor. This course presents an introduction to the historical roots and basic assumptions of group training methods. The specific focus is on those structured, behavioral interventions that are designed to be time limited and emphasize staff development or training needs of clients. Needs assessment, screening, program development and evaluation, consultation methods, and ethics are included as topics. Leadership styles and the composition of training grant proposals are developed and critiqued in the laboratory/experiential component of this course.

**PSYC 659 Seminar in Consultation Psychology**

Semester course; 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Explores theory and practice of psychological consultation using case materials, readings, and individualized projects. Covers conceptual models and role choices available to the consulting psychologist, common phases, principles, and practices found in the consultation process and program evaluation and consultation research methods and issues.

**PSYC 660 Health Psychology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 629 and graduate standing in psychology, or permission of instructor. Provides an overview of research in and applications of the principles of behavioral psychology with respect to the fields of medicine, health maintenance, and illness. Emphasizes the integration of theoretical research and applied issues in these areas. Surveys major topics in

behavioral medicine, including psychophysiological disorders, compliance and adherence with health care regimens, psychological adjustment to illness and pain, behavioral dentistry, pediatric psychology, cardiovascular risk reduction, eating and sleeping disorders, behavioral pharmacology, biofeedback. Explores roles of psychologists.

**PSYC 665 Psychodynamic Approaches to Psychological Treatment**

Semester course; 3 credits. Prerequisite: Permission of instructor. Examines basic principles in conceptualizing and treating clients from a psychodynamic perspective. Theoretical and clinical readings and case materials are used as a basis for an in-depth analysis of psychodynamic theories and practices within a seminar format.

**PSYC 666 Crisis Intervention: Theory, Research, and Practice**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Review of the development of the concept of psychological crisis and of intervention programs in a range of areas such as sexual assault, natural disasters, telephone hotlines, and medical emergencies. Relevant theory and data from community psychology, laboratory and applied research, sociology, and psychiatry will be considered.

**PSYC 667 Behavior Therapy**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing in psychology and permission of instructor. Emphasizes group and individual approaches to the following general areas: observational techniques; counterconditioning and extinction procedures; techniques of positive and negative control; self-control procedures; use of modeling and role playing as change techniques; behavioral feedback and cueing procedures.

**PSYC 668 Interpersonal Psychotherapy: Social Psychological Analysis**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Analysis of counseling and psychotherapy as interpersonal influence processes. Applications of social psychological theories and research to the process of therapeutic change; identification of key aspects of the change process and of how these aspects are embodied in current approaches and techniques of counseling and psychotherapy. Emphasis on experimental methods of studying change processes.

**PSYC 669 Interpersonal Psychotherapy: Communication Analysis**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Theory and research in nonverbal communication. Communication theories of psychotherapy and a communication analysis of key concepts in psychotherapy.

**PSYC 670 Seminar in Gestalt Therapy**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Philosophical basis, historical background, theoretical formulation, techniques, and application of Gestalt therapy. Students will have the opportunity to practice and observe the techniques.

**PSYC 671 Readings and Research**

Semester course; 1-3 credits. May be repeated for a maximum of nine credits. Prerequisite: Written permis-

sion of instructor. Individual study leading to the investigation of a particular problem in a systematic fashion under the supervision of a member of the faculty.

**PSYC 675 Ethical Principles of Psychology**

Semester course; 2 lecture hours. 2 credits. A discussion of some of the current problems of interest to psychologists. Particular emphasis on the ethical principles of psychology, and the dilemmas encountered in the teaching, research, and applied practice of psychology.

**PSYC 676 Personal Awareness in Multicultural Counseling**

Semester course; 2 seminar hours and 1 hour skills building component. 3 credit hours. Prerequisite: Graduate standing in the counseling psychology doctoral program or permission of the instructor. Focus on (1) self-awareness regarding cultural issues, (2) knowledge of cultural differences and (3) counseling skills with culturally different clients. This course will provide the theoretical and research knowledge base to complement students' experiential training in multicultural issues. Building on the students' knowledge of Western and non-Western psychology theories and practices, the course will help students in developing a theory of cross-cultural and multicultural counseling. The course will further focus on historical development of multiculturalism and examine existing research in this area.

**PSYC 677 Minority Issues in Mental Health**

Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Presents an overview of issues pertaining to the mental health of racial/ethnic groups (VREG) in the United States (i.e., African-Americans, Hispanics, Asian-Americans and Native Americans). Topic areas include research and psychological theories, assessment, diagnosis, ethnic identity acculturation, service utilization, the family, psychotherapy and training issues.

**PSYC 690 Research Practicum**

Semester course; 4 hours per credit. 1-3 credits. Available to graduate students in the psychology department with approval by their program committee. Provides the graduate student in psychology the opportunity to design and apply research skills under close faculty supervision. Involves research projects that progressively become more sophisticated as students increase their research skills.

**PSYC 691 Special Topics**

Semester course; 3 lecture-seminar hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Theory, research, and techniques in specialized topics of current interest are presented.

**PSYC 693 Counseling Practicum**

Semester course; one-half day per credit. 1-3 credits. May be repeated for a maximum of 12 credits. Available only to graduate students in counseling psychology approved by the counseling program committee. A series of training experiences designed to facilitate progressively greater degrees of skill development in counseling psychology.

**PSYC 694 Clinical Practicum**

Semester course; one-half day per credit. 1-3 credits. May be repeated for a maximum of 12 credits. Available only to graduate students in clinical psychology approved by the clinical program committee. The

graduate student in clinical psychology is given an opportunity to apply and practice interviews and diagnostic and therapeutic skills with clients requiring psychological services. Careful supervision and evaluation of the student is provided. The practicum may be located at a clinic on campus or in a hospital or other agency off campus.

**PSYC 695 Practicum in Clinical or Counseling Supervision**

Semester course; 4 supervisory hours. 2 credits. May be repeated for a maximum of six credits. Credits earned do not count as course credits toward the degree. Prerequisites: Permission of instructor, enrollment in graduate program in clinical or counseling psychology, completion of 12 hours of clinical (PSYC 694) or counseling (PSYC 693) practicum. This course is an opportunity to develop, apply, and practice psychotherapy supervision skills under the direct supervision of clinical or counseling faculty members.

**PSYC 696 Internship**

0.5 credit. Prerequisite: Approval of the director of the program involved. The internship is one-year, full-time assignment, under supervision, to an agency approved by the student's program committee.

**PSYC 700 Grant Writing**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Two graduate courses in statistics or permission of instructor. Students are expected to enter course with a pre-approved topic identified and substantial background reading completed. Focuses on preparing an NIH grant application, using F31-F32 mechanism (predoctoral or postdoctoral National Research Service Award) as a model. Course covers elements of a grant application, details of the grant review process, and key features of successful applications. Students prepare a research plan for their own application based upon their current work.

**PSYC 702/MGMT 702 Causal Analysis for Organizational Studies**

Semester course; 3 lecture hours. 3 credits. Prerequisites: 2 graduate courses in statistics or permission of instructor. Focuses on conceptual and statistical issues involved with causal analysis with nonexperimental and experimental data. Course covers basic and advanced confirmatory factor analysis and structural equation techniques, with an emphasis on organizational and psychological applications.

**PSYC 795 Practicum in the Teaching of College Psychology**

Semester course; 3 credits. May be repeated. Prerequisites: Appointment as a graduate teaching assistant in psychology or permission of instructor. Students develop skills in the design and conduct of undergraduate courses in psychology through observation and supervised experiences; acquaints students with university, college, and department policies and resources in support of instruction; familiarizes students with disciplinary resources; assists students in evaluating personal strengths and weaknesses.

**PSYC 798 M.S. Thesis**

1-6 credits. May be repeated.

**PSYC 898 Doctoral Dissertation**

1-12 credits. May be repeated.

## Public Policy and Administration

See the Center for Public Policy Graduate Programs chapter of this bulletin for information on the Ph.D. in Public Policy and Administration.

## Department of Sociology and Anthropology

Bromley, David, Professor

Ph.D. Duke University

Deviance, social movements, sociology of religion.

Bryant, Nita, Assistant Professor and Graduate Director

Ph.D. University of Virginia

Race and ethnicity, social change, social network analysis.

Creighton-Zollar, Ann, Associate Professor

Ph.D. University of Illinois, Chicago

Minorities and ethnic relations.

Croteau, David, Associate Professor

Ph.D. Boston College

Class and inequality, political sociology, social movements.

Henry, Neil W., Associate Professor

Ph.D. Columbia University

Social statistics, mathematical models.

Honnold, Julie A., Associate Professor

Ph.D. University of Denver

Environmental sociology, sociology of the family.

Lyng, Stephen, Associate Professor

Ph.D. University of Texas

Medical sociology, work and occupations, theory.

Mahoney, John S., Assistant Professor

Ph.D. University of Virginia

Collective behavior, social movements, race, ethnic, minority relations.

Marolla, Joseph A., Associate Professor and Director,

Center for Teaching Excellence

Ph.D. University of Denver

Social psychology, sociology of education.

Nelson, Lynn D., Professor

Ph.D. Ohio State University

Environmental sociology, Russian society, comparative politics.

Rankin, Daphne, Instructor

M.S. Virginia Commonwealth University

Human sexuality, AIDS, family studies.

Scully, Diana H., Professor

Ph.D. University of Illinois, Chicago

Sociology of medicine, sex roles, sexual violence.

Turner, Christina, Associate Professor

Ph.D. Tulane University

Economic anthropology, Latin America, world development and social relations.

Williams, J. Sherwood, Professor and Department Chair

Ph.D. Washington State University

Research methods and behavioral sociology.

The Department of Sociology and Anthropology offers programs leading to the degree of master of science and the certificate of applied social research. The goal of the graduate program in sociology is to facilitate the development of theoretical, methodological and substantive competence appropriate for students' interests and career goals. In keeping with VCU's role as an urban institution, the program focuses on the study of urban social problems, policy alternatives and strategies for change.

### Admission requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and in the College of Humanities and Sciences, the following requirements represent the minimum acceptable standards for admission:

- Applicants must submit a transcript of their undergraduate course work and the results of their GRE in general aptitude (quantitative, analytical and verbal).
- Admission priority is given to students with an undergraduate GPA of 3.0 or higher on a four-point scale. Students with GPA below 3.0 will be evaluated by the graduate coordinator and members of the graduate faculty on the basis of the GRE scores, recommendations from references and other data submitted by applicants.
- To be admitted as a regular graduate student, applicants should have completed 24 semester hours in the social sciences (including history), with at least 12 credits in sociology. Undergraduate work in sociology should include a survey of sociological theory, research methods and statistics. Students who otherwise are qualified for admission but lack this background may be admitted provisionally, with the stipulation that they may be requested to make up any deficiencies specified by the graduate coordinator. Nondegree or "special" students must apply for regular student status after completing six sociology graduate credits.

Because of the diversity in different institutions of higher education, students trained abroad may be judged on an individual basis. Criteria on which this judgment is based include the reputation of the foreign university, the student's academic record, proficiency in English and recommendations from professors. VCU requires

that foreign students demonstrate guarantees of financial support.

A limited number of assistantships are available for qualified applicants. Applicants for assistantships should have their files complete by Feb. 15. Individuals not applying for assistantships should file their applications for graduate study as early as possible to permit adequate review and to ensure consideration. Applications that reach VCU after July 1 for the fall semester and after Nov. 15 for the spring semester may not be processed in time for registration.

### Degree requirements

Two options are available for students pursuing a master's degree in sociology. Students must receive approval from the graduate student coordinator before choosing either option.

### Thesis option

Thirty-six hours of graduate course work must be completed including the following core courses: SOCY 502 Contemporary Sociological Theory, SOCY 601 Advanced Methods of Social Research, SOCY 602 Applications of Advanced Research Methods, and SOCY 608/STAT 608 Statistics for Social Research. A master's thesis will be developed under the guidance of the thesis committee (three faculty members including a thesis adviser) and must be defended publicly. The student may present up to six thesis credits for graduation. Up to six credits of independent study may be presented, as well as six credits outside the department.

### Concentration option

Requirements are identical to the thesis option except for the following: (a) Students must complete 36 semester hours of course work; (b) Students must declare a concentration option prior to completing their 28th hour of course work; (c) Students, in consultation with their advisers, will select an advisory committee (three faculty members including the adviser) which will develop an area of concentration consisting of 15 credits. Six of these credits may be taken prior to committee approval of the concentration area. Of the 15 hours, students may take up to nine credits outside the department, or six credits of independent study, provided the advisory committee approves. At no time should the combination of independent study hours and courses taken outside the department exceed nine hours. Students

will receive certification of the concentration area by having it listed on their transcripts; (d) Students will submit to their advisory committee a "concentration area paper" which must demonstrate competence in the subject matter by reviewing literature and discussing prominent issues. Students must enroll for one credit of independent study while working on the concentration area paper. (A maximum of one credit of independent study for the purpose of writing the paper may be applied to the degree.)

For all candidates, an overall GPA of at least 3.0 ("B") must be maintained in order to receive a degree. A student who does not maintain a 3.0 average may be dropped from the master's program at any time by the graduate program director. A review of all first year graduate students will be conducted at the end of their second semester by the graduate program director and three appointed faculty. The purpose of this review will be to assess all first year students on their satisfactory/unsatisfactory progress toward the master's degree.

## Graduate Certificate in Applied Social Research Program

The certificate program is designed (1) to enable practitioners to acquire additional knowledge and skills in applied social research without necessarily pursuing a graduate degree and (2) provide marketable job/career skills for graduate degree-seeking students in sociology as well as other graduate programs. Because the proposed certificate program involves a limited number of credit hours and coordinates with the type of statistics and methods courses offered in a number of graduate degree programs, it may be pursued simultaneously with such programs as sociology, social work, public administration, social policy and urban services. At the same time, individuals seeking more limited, specialized training may pursue the certificate independently.

## Program admission and matriculation requirements

Students possessing a B.A. or B.S. degree and beginning level skills in statistics/research methods are eligible for admission into the certificate program. Relevant course or research experience will be considered in evaluating admission and substitution of courses. Equivalency tests are available for required courses in statistics and methods. No more than six hours of

substitution or equivalency credit will be granted. An overall GPA of 3.0 is required for award of the certificate, and no more than one grade of "C" may be earned in the certificate program curriculum.

## Certificate in applied social research curriculum

A total of 19 hours is required to earn the applied social research certificate. Four courses (12 credits) in statistics and research methods are required. In addition, two internship courses (four credits), which offer the opportunity for involvement in all phases of ongoing research projects, are required. One course (three credits) may be elected to develop more specialized types of research skills.

### Required courses (16 credits)

- SOCY 601 Advanced Methods of Social Research  
(Prerequisites: SOCY 320 and SOCY/STAT 508 or equivalent)
- SOCY 602 Applications of Advanced Research Methods  
(Prerequisites: SOCY 601 and SOCY/STAT 608)
- SOCY 605/PADM 605 Survey Research Methods  
(Prerequisites: SOCY 601, SOCY 602, and SOCY/STAT 608, or permission of instructor)
- SOCY 608/STAT 608 Advanced Statistical Methods  
(Prerequisite: SOCY/STAT 508 or permission of instructor)
- SOCY 693 Applied Research Internship I
- SOCY 693 Applied Research Internship II

### Elective courses (3 credits)

- SOCY 603 Seminar in Population Studies
- SOCY 623 Causal Analysis
- SWKD 729 Program Evaluation for Social Welfare Practice
- SLWK 606 Social Welfare Policy, Community Planning and Organizational Practice II
- SLWK 656 Social Planning II
- MRBL 673 Marketing Research

## Graduate courses in sociology (SOCY)

### SOCY 500 Advanced Principles of Sociology

Semester course; 3 lecture hours. 3 credits. A comprehensive analysis of the concepts and techniques useful for understanding society and culture as well as the social processes and structures operant within these spheres.

### SOCY 501 The Foundations of Sociological Theory

Semester course; 3 lecture hours. 3 credits. The foundations of theoretical explanation of the social world is addressed from an historical and philosophical perspective. The emergence of contemporary sociological theory in the 19th and 20th centuries is reviewed.

### SOCY 502 Contemporary Sociological Theory

Semester course; 3 lecture hours. 3 credits. A critical assessment is given of such contemporary theoretical

orientations as functionalism, conflict theory, exchange theory, symbolic interactionism and phenomenology.

### SOCY 508/STAT 508 Introduction to Social Statistics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to statistical methods applicable in a variety of settings, with emphasis on nonexperimental data. Data description and analysis including chi-square and t-tests, using a statistical computing package. Not applicable toward M.S. degrees in mathematical sciences, sociology, or computer science.

### SOCY 524 Aging and the Minority Community

Semester course; 3 lecture hours. 3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological, and psychological aspects of minority aging. Attention will also focus on dominant social problems and federal policies toward the aged.

### SOCY 601 Advanced Methods of Social Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 320 and SOCY/STAT 508 or equivalent. Research as a systematic process involving formulation of the problem, design of the research, field operation, the processing and analysis of data, and preparation of the research report. Also considered are critical analyses of current methods, administration of research projects, and the significance of research to social action.

### SOCY 602 Applications of Advanced Research Methods

Semester course; 3 lecture and conference hours. 3 credits. Prerequisites: SOCY 601, and 608. The methods of developing a research project will be analyzed from the initial problem identification, literature review, theoretical framework, through research design, and procedures.

### SOCY 603 Seminar in Population Studies

Semester course; 3 lecture hours. 3 credits. Analysis of fertility, mortality, and migration from a sociodemographic perspective. Special attention will be paid to sociological determinants of demographic processes and their interrelationships.

### SOCY 604 Sociology of Work in Industry

Semester course; 3 lecture hours. 3 credits. Analyses of work relations and the social structures and mechanisms that govern and arise out of them and examination of the social problems that are inherent in the characteristics that make a society an industrial society.

### SOCY 605/PADM 605 Survey Research Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 601, SOCY 602, and SOCY/STAT 608 or permission of instructor. Examines all major areas of survey research methodology including sampling, design, data collection methods, questionnaire design, data analysis, and data processing. Addresses problems specific to survey research, such as telephone interviewing, constructing large representative samples, and nonresponse rates.

### SOCY 607 Seminar in Racial and Ethnic Relations in America

Semester course; 3 lecture hours. 3 credits. A study of intergroup relations in such areas as housing and school

desegregation, racism, minority and athletics, the emergence of white ethnic groups in the political systems, and the position of minorities in legal, economic, and medical institutions.

#### **SOCY 608/STAT 608 Statistics for Social Research**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: SOCY/STAT 508 or permission of instructor. Statistical methods applied in social research. Topics include analysis of variance, correlation and regression, including stepwise methods, and the analysis of discrete data. Study of a statistical package, emphasizing manipulation of survey data sets. Not applicable toward M.S. degree in mathematical sciences or computer science.

#### **SOCY 609 Seminar in the Family**

Semester course; 3 lecture hours. 3 credits. Analysis of contemporary family life with an emphasis on the influence of social change. Consideration of current family crises and problems.

#### **SOCY 610 Complex Organizations**

Semester course; 3 lecture hours. 3 credits. A study of complex organizations in society with emphasis on the determinants and effects of organizational structure and process.

#### **SOCY 611 Studies in the Community**

Semester course; 3 lecture hours. 3 credits. The organization of the community with emphasis on major trends in urban development and growth. The interdependence of political, social, and economic geographic units. The need for cooperative planning and control.

#### **SOCY 612 Seminar in the Sociology of Deviant Behavior**

Semester course; 3 lecture hours. 3 credits. The nature and functions of deviance. Theories and problems of social control.

#### **SOCY 613 Social Stratification**

Semester course; 3 lecture hours. 3 credits. An in-depth analysis of status differentials in society (e.g., social class, prestige, and power).

#### **SOCY 614 Seminar in the Sociology of Education**

Semester course; 3 lecture hours. A sociological analysis of education as a social institution with an emphasis on methodological issues and policy implications.

#### **SOCY 615 Seminar in Mass Communications**

Semester course; 3 lecture hours. 3 credits. Some theoretical background in sociology is recommended. A sociological analysis of contemporary media and their interrelationships with social systems, media, and national development. Special emphasis on media as instruments of social and cultural change.

#### **SOCY 620/CRJS 620 Seminar in Criminology**

Semester course; 3 lecture hours. 3 credits. Examination and analysis of social, psychological, and economic theories and correlates of criminal behavior. Typologies of offenders.

#### **SOCY 622 Theory Construction**

Semester course; 3 lecture hours. 3 credits. A consideration of recent social theorists in which emphasis is placed on the logic of theory construction.

#### **SOCY 623 Causal Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 602 and SOCY/STAT 608 or equivalent.

alent. An examination of the utility of causal reasoning in the social sciences and an introduction to causal modeling. Topics studied will include the development of theoretical linkages, recursive and nonrecursive path estimation, causal thinking and theoretical refinement, and policy analysis and system dynamics.

#### **SOCY 624/GRTY 624 Community and Community Services for the Elderly**

3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological, and social dimensions of community and on communities of the aged.

#### **SOCY 625 Urban Sociology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing. A detailed analysis and examination of the social and ecological structures and processes of the modern city with primary emphasis on the macro-level organization of urban life.

#### **SOCY 630 Social Psychology**

Semester course; 3 lecture hours. 3 credits. Discussion and investigation of selected social psychological issues in sociology, as well as traditional and innovative methodology applied to these issues.

#### **SOCY 640 Seminar in Political Sociology**

Semester course; 3 lecture hours. 3 credits. Analysis of structures and processes of political organization. Examination of the creation and management of power, diffusion and regulation of conflict, and the politics of modernization and bureaucratization.

#### **SOCY 645 The Sociology of Health and Illness**

Semester course; 3 lecture hours. 3 credits. An examination of sociocultural factors in health and illness and the influence of social factors on recovery and rehabilitation. Special attention will be paid to the methodology found in current studies.

#### **SOCY 646 Seminar in the Sociology of Mental Health and Disorder**

Semester course; 3 lecture hours. 3 credits. Seminar in social organizational causes of clinical depression, schizophrenia, neurosis, and personality disorders. Focus is on prevention through social engineering and social policy. Impact of social change, sex roles, and socialization processes on rates of mental disorder emphasized.

#### **SOCY 650 Theories of Social and Institutional Change**

Semester course; 3 lecture hours. 3 credits. A study of social change with emphasis on institutional settings. Topics examined include alternative theoretical perspectives on change, structural sources of change, approaches to planned change, and the role and function of change agents.

#### **SOCY 660 Seminar in the Sociology of Women**

Semester course; 3 lecture hours. 3 credits. An analysis of the sociological basis for the roles and status of women across cultures and the social forces that create and maintain gender hierarchy.

#### **SOCY 690 Practicum in the Teaching of College Sociology**

Semester course; 1 credit. Enables students to develop skills in the design and conduct of undergraduate courses in sociology through observation and supervised experiences.

experiences. Credits not applicable toward degree in sociology.

#### **SOCY 692 Independent Study**

Semester course; 1-3 credits. A maximum of six credits may be submitted toward the master's degree. Prerequisites: Permission of an instructor and the graduate program committee.

#### **SOCY 693 Applied Research Internship**

Semester course; 1 lecture and 1 laboratory hour. 2 credits. May be repeated for credit one time. Provides graduate students with direct experiences in applied social research. Requires students to attend seminars to provide an academic framework for students' participation in the research process. Utilizes laboratory work to provide a variety of experiences in the various aspects of research. Graded as pass/fail.

#### **SOCY 698 M.S. Thesis**

1-6 credits. May be repeated.

### **Department of Statistical Sciences and Operations Research**

Bauer, David F., Professor (Biostatistics and Occupational Therapy)\*

Ph.D. University of Connecticut

Mathematical statistics and nonparametric methods.

Davenport, James M., Associate Professor

Ph.D. Southern Methodist University

Statistics.

Hardin, Jill, Assistant Professor

Ph.D. Georgia Institute of Technology

Operations research.

Henry, Neil W., Associate Professor (Sociology and Anthropology)\*

Ph.D. Columbia University

Multivariate statistics and survey research.

Mays, D'Arcy P., Associate Professor and Department Chair

Ph.D. Virginia Polytechnic Institute and State University

Experimental designs, regression analysis, response surface methodology.

Mays, James E., Assistant Professor

Ph.D. Virginia Polytechnic Institute and State University

Nonparametric and robust regression analysis, experimental design.

Merrick, Jason R. W., Assistant Professor

D.Sc. George Washington University

Bayesian reliability modeling.

Street IV, W. Scott, Assistant Professor

Ph.D. University of South Carolina

Environmental statistics, linear models, computing, using technology in teaching, the World Wide Web.

Williamson, Patricia Pepple, Associate Professor

Ph.D. Bowling Green State University

Bayesian analysis and decision theory.

\* Department in parentheses indicates affiliate appointment.



**Emeritus faculty**

Minton, Paul D., Professor Emeritus of Mathematical Sciences and Biostatistics  
Ph.D. North Carolina State University

The Department of Statistical Sciences and Operations Research offers programs leading to a master of science in mathematical sciences with a concentration in either operations research or statistics. The department also offers a post-baccalaureate certificate in statistics. The curriculum of the master's program is run jointly with the Department of Mathematics and Applied Mathematics.

**Admission requirements**

In addition to the general requirements for admission to graduate programs listed in the School of Graduate Studies chapter and the College of Humanities and Sciences chapter of this bulletin, the following requirements represent the minimum acceptable standards for admission:

- Thirty credits in undergraduate mathematical sciences, computer science or related areas of which at least 18 semester credits must represent upper-level courses.
- Three letters of recommendation pertaining to the student's potential ability as a graduate student in mathematical sciences.
- General GRE scores required.

Provisional admission may be granted when deficiencies exist. These deficiencies must be removed by the end of the first year of residence, or its part-time equivalent, when the student's application will be re-examined. Courses that are remedial or designed to remove deficiencies will not be accepted for credit toward the fulfillment of the course requirements for the master's degree.

**Degree requirements**

The program offers maximum flexibility by allowing students, in consultation with their graduate committees, to design a course of study that will best develop competence in those areas most relevant to their scholarly and professional objectives. This program consists of a minimum of 30 semester credits of which at least 15 must be at the 600 level. Each student will select either the thesis or non-thesis option. A student who chooses the thesis option has a choice of writing a research thesis or an expository thesis. A research thesis is one which, in the opinion of the student's thesis adviser and thesis committee, contains sig-

nificant original research. For this thesis, the student may count six credits of STAT 698 or OPER 698. Otherwise, a student may write an expository thesis. For this type of thesis, the student may count three credits of STAT 698 or OPER 698. The student who elects the non-thesis option must pass a written examination and may be asked to take an oral examination.

Note that the following courses may not be applied to the credit requirements for the M.S. degree in mathematical sciences: STAT/SOCY 508, SOCY 543, STAT/BIOS/PMCH 543 and STAT/SOCY 608.

**M.S. in Mathematical Sciences Program**

Non-thesis option	credits
Mathematical sciences (including both semesters of a 600-level sequence)	21
Mathematical sciences or allied health field*	6-9
Research seminar credits**	2-5
Directed research credits**	0-3
Total	30
Thesis option	credits
Mathematical sciences (including both semesters of a 600-level sequence)	18
Mathematical sciences or allied health field*	6-9
Thesis credits	3 or 6
Research seminar credits**	1-3
Directed research credits**	0-3
Total	30

\* Courses selected from an allied field must be approved by the department's Graduate Affairs Committee.

\*\* The student who chooses the non-thesis option may receive a maximum total of four credits for MATH 690 Research Seminar and STAT 697 or OPER 697 Directed Research. The student who chooses the thesis option usually will not take directed research, but he or she is not prohibited from doing so. In the thesis option, a total of seven credits for thesis, research seminar and directed research is the maximum credit permitted.

**M.S. degrees in mathematical sciences**

Students may obtain a designation on their transcripts indicating that their graduate study has emphasized one of the following graduate concentrations by completing the requirements that are listed here for that concentration. A student who has not satisfied the requirements for one of these concentrations, but who has otherwise fulfilled all the requirements for a master's degree, will be awarded a degree of master of science

in mathematical sciences without any specialty concentration designation.

**M.S. in operations research/mathematical sciences**  
OPER 527-528, STAT 541; two courses selected from OPER 631, 641, 643, 645, 647, STAT 613, 614, 648, 649, or approved OPER 691 and/or STAT 691 and at least one two-course sequence selected from (1) STAT 643 and 644, (2) STAT 642 and one of 623, 626, 643, 645, (3) CMSC 508 and 608, (4) INFO 610 and 614. Also, at least one seminar and the thesis (if chosen) must concern topics of operations research.

**M.S. in statistics/mathematical sciences**

OPER 513, 514\* and nine additional credits in statistics courses, including at least six credits in 600-level statistics courses. Three of the 600-level credits must be selected from STAT 613-614, STAT 645 or STAT 691\*\* and three credits from STAT 623, STAT 626, STAT 644 or STAT 691\*\*. Also, at least one seminar and the thesis (if chosen) must concern topics of statistics.

\* If a student previously received credit for one or both of these courses or their equivalent, then one or two of the other courses mentioned for this concentration must be taken as substitute(s) to satisfy the minimum requirement of 15 credits of course work in the concentration.

\*\* Use of STAT 691 to meet this requirement must be approved by the Department of Statistical Sciences and Operations Research and the Graduate Affairs Committee of the department at the time the course is scheduled.

**Mathematical sciences certificate in statistics**

The Department of Statistical Sciences and Operations Research offers a post-baccalaureate certificate in statistics. This certification program in statistics is designed to allow students with undergraduate majors in various disciplines an opportunity to acquire the formal training in statistics that currently is in demand in industry and government. Some students also may find this program a useful way to prepare for graduate study in statistics. Students seeking more information or wishing to enter the certificate program should contact the Department of Statistical Sciences and Operations Research.

**Graduate courses in operations research (OPER)****OPER 520/MATH 520 Game Theory and Linear Programming**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MATH 310. The mathematical basis of game theory and linear programming. Matrix games, linear inequalities and convexity, the mini-max

theorems in linear programming, computational methods and applications.

#### **OPER 527 Deterministic Operations Research**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: CMSC 245 or 255, MATH 310 or permission of the instructor. Introduction to decision making using mathematical programming and system optimization. Topics include linear programming and the simplex method, nonlinear optimization and evolutionary methods. Applications to manufacturing, transportation, inventory control, project management and scheduling problems.

#### **OPER 528 Stochastic Operations Research**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: CMSC 245 or 255, MATH/STAT 309, and MATH 310 or equivalent. Introduction to decision making under uncertainty and the modeling of stochastic system. Topics include decision analysis, decision trees, attitudes to risk and the concept of utility, Monte Carlo simulation and risk analysis, discrete Markov Chains, birth-death processes and queueing models. Applications to decision problems in business and engineering will be discussed.

#### **OPER 591 Topics in Operations Research**

Semester course; 1-3 lecture hours. 1-3 credits. May be taken more than once for credit. Prerequisite: Permission of the instructor. A detailed study of selected topics in operations research.

#### **OPER 631 Mathematical Programming**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: OPER 527. Necessary and sufficient conditions for optimal solutions. Duality theory. Theoretical and practical development of solution techniques for operations research problems. Some current algorithms will be discussed.

#### **OPER 639 Practical Optimization**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: OPER 527 and CMSC 255. The application of optimization theory toward the solution of practical problems in operations research. The use and analysis of computer programs available to solve such problems. The algorithms used in these programs will be discussed from a practical and theoretical point of view.

#### **OPER 641 Discrete Event System Simulation**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: STAT 541 or equivalent or permission of instructor. An introduction to the application and theoretical background of system simulation. Topics include systems concepts, modeling systems using discrete events and the modeling of manufacturing and materials handling systems, computer systems and service systems through simulation. Theoretical topics include random variable generation, model verification and validation, statistical analysis of output, variance reduction techniques and optimization via simulation. A high-level simulation language will be utilized. Students will complete and present a simulation project.

#### **OPER 643 Decision and Risk Analysis**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MATH/STAT 309. This course presents the decision and risk analysis theory and methodology. Decision analysis applies to hard problems involving sequential decisions, major uncertainties, significant outcomes, and complex values. The course includes: decision structuring with influence diagrams and deci-

sion trees; modeling uncertainty with subjective probabilities; sensitivity analysis and the value of information; and modeling preferences with utility functions. Decision and risk analysis applications in business and government are considered.

#### **OPER 645 Queuing Theory**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: OPER 528 or STAT 503. This operations research course provides a development of some basic queuing systems. Such systems will include birth-death queues, as well as the M/G/I and GI/M/S queuing systems. Other topics may include the GI/G/I queues, overflow queues, and some basic queuing networks.

#### **OPER 647 Multiobjective Decision Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite:

OPER 643 or permission of instructor. Introduction to the mathematical foundations of multiattribute utility theory. Topics covered include: structuring objectives; tradeoffs under certainty; unidimensional utility theory; multiattribute preferences under uncertainty; preferences over time; and aggregation of individual preferences. Real world applications will be discussed throughout.

#### **OPER 648/STAT 648 Systems Reliability Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite:

STAT 541 or equivalent, or permission of instructor. An introduction to engineering reliability and risk analysis, specifically failure data analysis, maintenance problems, system reliability and probabilistic risk assessment. Applications in computer science and engineering will include stochastic characterization of wear in hardware systems and the development of failure models for software systems. Decision problems such as the optimal maintenance of repairable systems and optimal testing policies for hardware and software systems will be examined. The analysis of risk through fault trees, event trees and accident precursor analysis also will be discussed.

#### **OPER 649/STAT 649 Statistical Quality Control**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: STAT 541 or equivalent, or permission of instructor. Demonstrates how statistics and data analysis can be applied effectively to process control and management. Topics include the definition of quality, its measurement through statistical techniques, variable and attribute control charts, CUSUM charts, multivariate control charts, process capability analysis, design of experiments, and classical and Bayesian acceptance sampling. Statistical software will be used to apply the techniques to real-life case studies from manufacturing and service industries.

#### **OPER 691 Special Topics in Operations Research**

Semester course; 1-3 lecture hours. 1-3 credits. May be

taken more than once for credit. Prerequisite: Permission of the instructor. A detailed study of selected topics in operations research.

#### **OPER 697 Directed Research**

Semester course; variable credits; 1-3 credits. May be

taken more than once for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one which significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

#### **OPER 698 Thesis**

Hours to be arranged. 1-3 credits. A total of three or six credits may be applied to the M.S. degree in Operations Research/Mathematical Sciences. (A total of three credits for an expository thesis or a total of six hours for a research thesis.) May be taken more than once for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this bulletin. A grade of "S" (satisfactory), "U" (unsatisfactory), or "F" (failure) may be assigned in this course.

### **Graduate courses in statistics (STAT)**

#### **STAT 503 Introduction to Stochastic Processes**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 307 and 309. A continuation of topics given in MATH 309. An elementary introduction to stochastic processes and their applications, including Markov chains and Poisson processes.

#### **STAT 508/SOCY 508 Introduction to Social Statistics**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to statistical methods applicable in a variety of settings, with emphasis on nonexperimental data. Data description and analysis including chi-square and t-tests, using a statistical computing package. Not applicable toward M.S. degrees in mathematical sciences, sociology, or computer science.

#### **STAT 513-514/BIOS 513-514 Mathematical Statistics I-II**

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisite: MATH 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

#### **STAT 523/BIOS 523 Nonparametric Statistical Methods**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two- and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables and coefficients of association.

#### **STAT 541 Applied Statistics for Engineers and Scientists**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 200-201 or equivalent, and a working knowledge of computers. An introduction to applied statistics intended primarily for students in mathematical sciences, engineering and the Commonwealth Graduate Engineering Program. The fundamental ideas of the collection and display of information, descriptive statistics and exploratory data analysis, elementary probability theory, frequency distributions and sampling are covered. Other topics include tests of hypotheses and confidence intervals for one and two sample problems; ANOVA; principles of one-factor experimental designs including randomized complete block designs, fixed and random effects and multiple comparisons; correlation and linear regression analysis; control charts; contingency tables

and goodness-of-fit. Students may receive degree credit for only one of STAT 541, STAT 543 or BIOS 553.

#### **STAT 543/BIOS 543/PMCH 543 Statistical Methods I**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

#### **STAT 544/BIOS 544 Statistical Methods II**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: One of the following: STAT 314, 541, 543 or equivalent. Advanced treatment of the design of experiments and the statistical analysis of experimental data using analysis of variance (ANOVA) and multiple-regression. Includes the use of a statistical software package for data analysis.

#### **STAT 591 Topics in Statistics**

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of the instructor. Course open to qualified undergraduates. Selected topics in statistics.

#### **STAT 608/SOCY 608 Statistics for Social Research**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: STAT/SOCY 508, SOCY 214, or permission of instructor. Statistical methods applied in social research. Topics include analysis of variance, correlation and regression, including stepwise methods, and the analysis of discrete data. Study of a statistical package, emphasizing manipulation of survey data sets. Not applicable toward M.S. degree in mathematical sciences or the M.S. degree in computer science.

#### **STAT 613-614 Stochastic Processes**

Continuous course; 3 lecture hours. 3-3 credits.  
Prerequisites: MATH 508 and STAT 514. Introduction to the theory and applications of stochastic processes. Random walks, Markov processes, queueing theory, renewal theory, birth-death and diffusion processes. Time series, spectral analysis, filter, autocorrelation.

#### **STAT 623 Discrete Multivariate Analysis**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: STAT 543, or permission of instructor. Methods for the analysis of contingency tables. Emphasis on social and biomedical applications of the general log-linear model.

#### **STAT 626 Complex Sampling Designs and Variance Estimation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: STAT 544 and 514. The analysis of data from surveys that use multistage samples, and connections to the analysis of observational studies and experiments with missing data. Computer intensive methodologies such as the jackknife and bootstrap will

be introduced and applied to the problem of variance estimation in these diverse settings.

#### **STAT 642 Design and Analysis of Experiments**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: STAT 541 or BIOS 553, or equivalent. An introduction to the design and analysis of experiments. Topics include the design and analysis of completely randomized designs, randomized block designs, Latin square designs, incomplete block designs, factorial designs, fractional factorial designs, nested designs and split-plot designs and response surface designs. Students will complete and present a research project on an advanced topic in experimental design. Applications involve the use of a statistical software package. Students may receive credit for only one of STAT 642, STAT 544 or BIOS 554.

#### **STAT 643 Applied Linear Regression**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MATH 200-201, STAT 212 and MATH 310 or equivalents. An introduction to the concepts and methods of linear regression analysis. Topics include simple linear regression, multiple linear regression, the impact of model misspecification, model selection criteria, residual analysis, influence diagnostics, diagnostic plots, multicollinearity, transformations and response surface methodology. Applications involve the use of a statistical software package.

#### **STAT 644 Advanced Regression**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: STAT 643 or equivalent. Theoretical development and advanced applications of the general linear regression model and nonlinear regression models. Topics include an overview of multiple linear regression, generalized least squares and weighted regression, procedures for diagnosing and combating multicollinearity, advanced model selection criteria, influence diagnostics including multiple observation diagnostics and singular value decomposition, nonlinear regression, Poisson regression, logistic regression, generalized linear models and the exponential family, variance modeling and nonparametric regression. Applications involve the use of a statistical software package.

#### **STAT 645 Bayesian Decision Theory**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: STAT 514. Presents statistical decision theory and Bayesian analysis, with discussions of loss functions, risk, utility, prior information; conjugate families; posterior distributions, estimation, hypothesis testing; empirical and hierarchical Bayes analysis; and robustness.

#### **STAT 648/OPER 648 Systems Reliability Analysis**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: STAT 541 or equivalent or permission of instructor. An introduction to engineering reliability and risk analysis, specifically failure data analysis, maintenance problems, system reliability and probabilistic risk assessment. Applications in computer science and engineering will include stochastic characterization of wear in hardware systems and the development of failure models for software systems. Decision problems such as the optimal maintenance of repairable systems and optimal testing policies for hardware and software systems will be examined. The analysis of risk through fault trees, event trees and accident precursor analysis also will be discussed.

#### **STAT 649/OPER 649 Statistical Quality Control**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: STAT 541 or equivalent, or permission of instructor. Demonstrates how statistics and data analysis can be applied effectively to process control and management. Topics include the definition of quality, its measurement through statistical techniques, variable and attribute control charts, CUSUM charts, multivariate control charts, process capability analysis, design of experiments, and classical and Bayesian acceptance sampling. Statistical software will be used to apply the techniques to real-life case studies from manufacturing and service industries.

#### **STAT 691 Special Topics in Statistics**

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Prerequisite: Permission of instructor. A detailed study of selected topics in statistics.

#### **STAT 697 Directed Research**

Semester course; variable; 1-3 credits per semester. May be repeated for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one that significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

#### **STAT 698 Thesis**

Hours to be arranged. 1-3 credits. A total of three or six credits may be applied to the M.S. in statistics/mathematical sciences. (A total of three credits for an expository thesis or a total of six credits for a research thesis.) May be repeated for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this bulletin. Grade of "S," "U," or "F" may be assigned in this course.

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## **Department of Urban Studies and Planning**

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Accordino, John, Associate Professor and  
Department Chair

Ph.D. Massachusetts Institute of Technology  
Economic development and finance, commercial  
revitalization, strategic planning.

Aspaas, Helen Ruth, Assistant Professor  
Ph.D. University of Colorado at Boulder  
Domestic and international rural development,  
gender and ethnicity.

Brooks, Michael P., Professor  
Ph.D. University of North Carolina  
Planning theory, political aspects of planning,  
planning practice.

Garcia, Margot W., Associate Professor  
Ph.D. University of Arizona  
Environmental planning, water policy, citizen  
participation, planning theory.

Gulak, Morton B., Associate Professor  
Ph.D. University of Pennsylvania  
Architecture and urban design, urban revitalization  
and physical planning.

Johnson, Gary T., Associate Professor  
D.E.D. Texas A & M University  
Transportation, housing, social policy.

Moeser, John V., Professor

Ph.D. George Washington University  
Urban politics and public policy.

Rugg, Robert D., Professor

Ph.D. University of Ottawa

Geographic information systems, planning methods.

Shriar, Avrum, Assistant Professor

Ph.D. University of Florida

Environmental geography and planning, natural resources, tropical conservation and development, Latin America and the Caribbean.

Wu, Weiping, Associate Professor

Ph.D. Rutgers University

Urban land and comprehensive planning, comparative urban development and policy, migration and urbanization.

The graduate program in urban and regional planning is accredited by the Planning Accreditation Board and provides professional grounding in the theory and methodologies of planning through a curriculum that balances classroom and field experience.

The master of urban and regional planning (M.U.R.P.) is a two-year degree program requiring 48 semester hours of class work. Each student must complete an internship with a planning agency or organization. A core of required courses, totaling 30 semester hours, includes:

Introduction to Planning  
Planning Information Systems  
Foundations for Development Planning  
Demographic Analysis in Planning  
Theories and Problems in Planning  
Legal and Legislative Foundations of Planning  
Planning Studio I  
Planning Studio II or Thesis  
Planning Practicum Seminar

In selecting their elective courses, students may (1) opt for exposure to a wide array of planning-related subject matter (the generalist or comprehensive approach), (2) select one of the areas of specialization defined by the department's faculty (see the list that follows), or (3) develop an individualized program, focusing on one or more self-defined topics. Regardless of the approach selected, students are expected to meet regularly with their faculty advisers for discussion of their courses of study in relation to their career plans.

The following faculty-defined areas of specialization are offered by the department:

urban revitalization and historic preservation  
housing and neighborhood planning  
economic development  
physical planning  
environmental planning

## Dual degree program in law and urban and regional planning

A cooperative arrangement with the T. C. Williams Law School makes it possible for students to receive a law degree (J.D.) and an urban and regional planning degree (M.U.R.P.) in four years rather than the five years ordinarily required.

The purpose of the program is to integrate the two professional curricula and to provide the expertise necessary to apply legal analytical skills and planning methods and analysis to urban and regional policy issues and problems. The dual degree program is designed to equip graduates for a variety of professional positions, including staff for legislative committees and government agencies and commissions, government legal staff, private consulting, neighborhood advocacy, directorships of planning and related agencies, and executive aides to elected officials.

Interested students must apply separately for and be admitted to the T. C. Williams School of Law, University of Richmond, and the Department of Urban Studies and Planning, VCU. Students will spend their entire first year in either the School of Law or the Department of Urban Studies and Planning, and their second year in the program not selected in the first year. Twelve credit hours of the planning program will be applied toward meeting the graduation requirements of the School of Law, and 12 credit hours in the School of Law will be applied toward meeting requirements of the Department of Urban Studies and Planning.

Upon admission to the dual degree program, every student will be assigned an adviser in each program who will assist in planning the course of studies that will include all of the required courses in each program plus such elective courses as will best serve the interests of the individual student.

Students deciding not to complete the dual degree program must meet all of the regular requirements of either the J.D. or M.U.R.P. to receive the degree of their choice.

## Certificate in Historic Preservation Planning (pending final approval of VCU Board of Visitors)

The certificate in historic preservation planning provides specialized training in the techniques and processes of historic preservation and planning. This graduate-level program includes courses in historic

preservation, architectural history, preservation analysis and methods, building reuse and the role of the public and private sectors in implementing proposals. The program is useful for mid-career professionals in planning, historic preservation, architecture and those in allied fields who wish to learn new skills to expand their career options. It also is useful for recent college graduates who desire advanced training in the application of historic preservation in urban development.

The certificate consists of nine credits in architectural history and nine credits in urban planning.

**Urban Planning.** After discussing the program with an adviser, choose three courses from among the following:

URSP 517 Historic Preservation in Planning  
URSP 610 Introduction to Planning  
URSP 611 Principles of Urban Design  
URSP 635 Legal and Legislative Foundations of Planning  
URSP 647 Adaptive Reuse of Buildings

**Architectural History.** After discussing the program with an adviser, choose three courses from among the offerings in architectural history at the 500 level or 700 level. Examples of courses are:

ARTH 502 Historic Preservation and Architectural History  
ARTH 789 Palladianism and its Alternatives  
ARTH 789 The World of Jefferson and Letrobo  
ARTH 789 From Neoclassicism to World War I  
ARTH 789 The Arts and Crafts Movement

## Admission requirements

Students must meet the following admission requirements:

- completion of an official application form;
- letter of intent describing interest in applying to the certificate in historic preservation planning;
- an official transcript showing successful completion of an appropriate undergraduate degree;
- three letters of recommendation; and
- a minimum grade-point average of 3.0 (out of 4.0) in the last 60 hours of undergraduate study.

## Certificate in Planning Information Systems Program

The certificate in planning information systems (CPI) is a program to provide specialized cross-disciplinary training for professionals with either information systems

or planning backgrounds, who wish to increase their knowledge and skills in the application of computer methods to urban and regional planning problems. The CPI Program consists of nine hours of courses in information systems and nine hours in urban studies and planning.

Admission requirements are the same as for the master of urban and regional planning (see "Admission Requirements").

### Urban Revitalization Certificate Program

The Urban Revitalization Certificate Program requires 18 semester hours of course work and can be completed in one academic year. A sequence of introductory courses exposes students to the planning process, housing policy, historic preservation, commercial revitalization, adaptive reuse of buildings and urban design. Course work in the area of urban revitalization is a blend of instruction in planning, urban design, business and economics.

Admission requirements include an official application; a letter of intent describing objectives in applying for the certificate; three letters of recommendation; two copies of an official transcript from an accredited institution showing undergraduate work and successful completion of an appropriate degree program with a minimum GPA of 2.7 (out of 4.0) in the last 60 semester hours of undergraduate study; demonstration of professional experience in planning or work related to the certificate program. The experience requirement may be waived for candidates who demonstrate professional promise. All credits earned are transferable to the Master of Urban and Regional Planning Program.

### Admission requirements

Beyond the general School of Graduate Studies admissions standards, the following specifications apply:

- Students must have a minimum of a 2.7 GPA (on a 4.0 scale) in their last 60 semester hours of undergraduate work. In addition, a GPA of not less than 3.0 must have been maintained in their undergraduate majors. Finally, applicants are expected to receive satisfactory scores on each of the categories in the GRE or on the LSAT examination.
- Students not meeting these requirements may be admitted to the program on a provisional basis. The provisional

period shall consist of the first nine to 12 hours of designated graduate work in which all grades must be no less than "B." Provisional admission does not constitute a waiver of the requirement related to a standardized test.

- Generally, at least two of the three letters of reference should come from former faculty.
- The latest dates for submitting application materials are April 15 to be considered for the following September and Nov. 15 for the following January. However, all candidates, especially those applying for financial aid, are urged to apply before March 1 in order to have the best chance of being accepted or receiving an award of financial assistance for the following academic year. Applicants who submit materials by March 1 will be notified of the decision of the Admissions Committee by mid-April.

### Part-time students

Since the department schedules several of its courses in the late afternoon or evening, the program accommodates both full- and part-time students. Students also may take advantage of courses offered in the summer. Thus it is possible for a part-time student taking six credits hours per semester to finish the master's degree in four years or less.

### Nondegree-seeking students

Nondegree-seeking students must have an undergraduate degree from an accredited institution and the written approval of the instructor prior to registering for any graduate-level course. No more than six credit hours can be taken by nondegree-seeking students without authorization from the department.

### Transfer credit

Upon acceptance to the program, up to six hours of graduate credits with grades of "B" or above may be applied to the degree if such work is considered relevant by the Admissions Committee.

### Financial aid

VCU maintains a Financial Aid Office, which is discussed in the Graduate Studies at VCU chapter of this bulletin.

There also is a limited amount of financial aid provided by the Department of

Urban Studies and Planning. Sources for financial aid include, but are not limited to:

### Graduate assistant positions

Duties involve helping with the instruction of courses. The level of support varies according to the work level, financial need and scholarship.

### Tuition scholarships

There are a limited number of tuition scholarships for full-time students.

### Research assistant positions

The stipend and number of positions depend upon the level of sponsored research carried out by the department in each year.

### T. Edward Temple Memorial Scholarship Award

This award of approximately \$500 a year is given to an outstanding graduate student.

### Requirements for the degree of master of urban and regional planning

1. Students must complete a minimum of 48 graduate credits, plus an internship. A core of required courses accounts for 30 of these credits; the remaining 18 are electives. An overall GPA of at least 3.0 (on a 4.0 scale) is required for receipt of the M.U.R.P. degree.
2. Students within the Masters of Urban and Regional Planning program are required to complete either a thesis (URSP 764) or to prepare a professional quality plan through our Planning Studio II course (URSP 762). The Department requests permission to utilize the grade of PR, in addition to normal letter grades (A, B, C, D, F) in URSP 762 Planning Studio II. This will allow students the ability to work on their plans over a more extended period of time, if necessary.

### Internship and placement

The internship is designed to give students practical experience in planning related activities in an institutional context. Normally, the internship is taken during the summer between the first and second year. Many opportunities for internship positions, as well as part- and full-time jobs in planning at all levels of government, exist within the Richmond area. Upon

request, the internship requirement may be waived for students with substantial professional experience.

## Additional information

Further information may be obtained by writing to the chair of the Department of Urban Studies and Planning, Virginia Commonwealth University, Richmond, VA 23284-2008; (804) 828-2489.

## Curriculum

First year, first semester	credits
URSP 610 Introduction to Planning	3
URSP 623 Planning Information Systems	3
URSP 662 Foundations for Development Planning	3
Elective	3

First year, second semester	
URSP 624 Demographic Analysis in Planning	3
URSP 632 Theories and Problems in Planning	3
URSP 635 Legal and Legislative Foundations of Planning	3
Elective	3
Internship	

Normally taken between the first and second year of course work, but other options are available. Internship must be taken prior to, or concurrent with, URSP 794 Planning Practicum Seminar.

Second year, first semester	
URSP 761 Planning Studio I	3
Electives	9

Second year, second semester	
URSP 762 Planning Studio II	6
URSP 794 Planning Practicum Seminar	3
Electives	3

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## Graduate courses in urban and regional planning (URSP)

### URSP 517 Historic Preservation in Planning

Semester course; 3 lecture hours. 3 credits. The course surveys the process of historic preservation that includes the evaluation of sites, identification of architectural styles, the adaptive use of sites and structures, and the various sources available for implementing preservation proposals in government or the private sector. Preservation is considered as a tool in the planning process; and its application to neighborhoods, downtowns, and other city districts is considered.

### URSP 521/GEOG 521/ENVS 521 Introduction to Geographic Information Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards,

public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

### URSP 525 Site Planning and Graphics

Semester course; 3 lecture hours. 3 credits. Addresses the environmental impacts and capacity of environmental systems in relation to the site requirements of various urban and rural situations. Introduces the use of graphics as an aid in presenting and analyzing planning and design ideas, maps and plans.

### URSP 541 Urban Public Policy-making Processes

Semester course; 3 lecture hours. 3 credits. Discusses the politics of urban life. Examines the physical, demographic and economic environments in which conflict resolution occurs, as well as the actors on the local, state and federal levels that participate in the political process.

### URSP 552 Urban Transportation Systems

Semester course; 3 lecture hours. 3 credits. An examination of urban requirements for mobility, transportation systems, problems of traffic, mass transit and new concepts for moving people and goods.

### URSP 567 The American Suburb

Semester course; 3 lecture hours. 3 credits. Provides students with an understanding of the suburban movement in America, the elements of suburban growth and an awareness of current and emerging approaches to suburban planning and design. Includes neotraditional design, transit oriented development, new urbanism and master planned communities. A working knowledge of the U.S. Census is needed for some assignments.

### URSP 605 Urban Planning History

Semester course; 3 lecture hours. 3 credits. Discusses the historical context of planning solutions to contemporary urban problems by examining the rich planning tradition since the mid-nineteenth century in the U.S. Significant plans, people and movements in the history of planning are discussed in relation to the evolving traditions of the profession.

### URSP 610 Introduction to Planning

Semester course; 3 lecture hours. 3 credits. Introduces students to the planning profession. Provides an overview of the urban system and the history of planning, and covers the basics of comprehensive planning, including the context, process, agents, methods, components, and implementation. Prepares students for taking more specialized planning courses by introducing the sub-areas of planning, such as transportation planning, land use planning, environmental planning, housing, and urban design.

### URSP 611 Principles of Urban Design

Semester course; 3 lecture hours. 3 credits. Principles of urban design at the micro- and macro-scale. Expression of planning objectives in physical design, with emphasis on the relationship between urban design at various scales and the needs of individuals and groups.

### URSP 623 Planning Information Systems

Semester course; 2 lectures and 2 laboratory hours. 3 credits. Introduction to data sources and database management for planning, including use of geographic information systems (GIS) in planning. An overview of database structures, public domain software and data resources, descriptive statistical analysis, graphic pres-

entation of data, and principles of cartographic design. Laboratory exercises using GIS software and public domain data to describe communities and identify planning issues.

### URSP 624 Demographic Analysis in Planning

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: URSP 623. Applies parametric and nonparametric analysis to census and other public domain data. Employs population projection techniques and survey research methods to analyze community planning needs.

### URSP 626/GEOG 626 GIS Applications for Planners

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: URSP 623. Examines in detail Geographic Information Systems.

### URSP 628 Land Use Planning

Semester course; 3 lecture hours. 3 credits. Introduces students to the context, substance, practical skills, and implementation of land use planning. Covers such topics as land capacity, land use system and design, land use controls, state and regional growth management, resource land preservation, rural growth management, urban containment, and facility planning.

### URSP 630/PADM 630 Strategic Planning and Management in the Public Sector

3 lecture hours. 3 credits. Explores the benefits and limitations of strategic planning and management in the public sector, examines approaches to strategic management, especially in terms of the role and behavior of top management, and provides an introduction to the analytic and process methods used in strategic planning and management.

### URSP 632 Theories and Problems in Planning

Semester course; 3 lecture hours. 3 credits. Examines major traditions in the theory of planning in the context of actual planning processes and outcomes. Explores in depth the political, economic, and institutional constraints to effective planning and plan implementation. Discusses the planners' ethical dilemmas.

### URSP 635 Legal and Legislative Foundations of Planning

Semester course; 3 lecture hours. 3 credits. Delineates the legal and legislative basis for planning at local, state, and federal levels. Judicial precedents in land use controls and environmental protection are investigated, including private controls, traditional zoning, administration of zoning ordinances, new flexible zoning concepts, development timing and growth controls, exclusionary land use practices, subdivision controls, and eminent domain regulations for environmentally sensitive areas, and environmental review.

### URSP 641 Citizen Participation and Negotiation

Semester course; 3 lecture hours. 3 credits. Studying the theory and practice of citizen participation and negotiation, planners learn to work with citizens in a democratic process while practicing respect for differing views.

### URSP 643 Housing Policy

Semester course; 3 lecture hours. 3 credits. Examines federal, state, and local housing policy. Discusses the issues of affordable housing, homelessness, and the private sector's contribution to housing.

**URSP 647 Adaptive Reuse of Buildings**

Semester course; 3 lecture hours. 3 credits. Describes from a public sector perspective identification for new uses, evaluation of benefits and preparation of implementation proposals for recycling older buildings. Discusses methods used to develop the necessary design guidelines as well as analyze these opportunities that can be a catalyst for urban revitalization.

**URSP 650 Environmental Planning**

Semester course; 3 lecture hours. 3 credits. Examines the impact of urban activities on the natural environment. Discusses federal, state, and local laws and policy governing air, water, waste, noise, and the natural processes of earthquakes, landslides and floods.

**URSP 652 Environmental Analysis**

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: URSP 650. Familiarizes students with methods to carry out an environmental analysis. Provides a deeper understanding of environmental issues.

**URSP 654/ENVS 654/BIOL 654 Environmental Remote Sensing**

Semester course; 3 lecture hours. 3 credits. Prerequisites: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

**URSP 662 Foundations for Development Planning**

Semester course; 3 lecture hours. 3 credits. Introduces public planners to the nature and development of the urban economy. Uses case study analysis of an economy's industrial structure, labor market, and other features. Considers the roles of public planners in maintaining a healthy economy.

**URSP 664 Urban Economic Development Policy**

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP 662. Examines the economic development planning and implementation processes through theory and case studies in urban settings. Special topics include economic development institutions and practices, small business development programs, labor force development, community-based development, and sustainable development strategies.

**URSP 666 Urban Commercial Revitalization**

Semester course; 3 lecture hours. 3 credits. Examines renewal of declining commercial areas in cities and towns as tools in the planning process. Discusses and applies through fieldwork, market studies and other analysis methods, strategies for revitalization, public and private project financing and development.

**URSP 681 International Urban Policy and Planning**

Semester course; 3 lecture hours. 3 credits. Offers a comparative analysis of planning practices and policies in both developing and developed countries. Covers such topics as local implications of globalization, regional development strategies, urban governance and management, urban economic policies, sustainable development and urban infrastructure and shelter delivery.

**URSP 691 Topics in Urban and Regional Planning**

Semester course; 1, 2, or 3 credits. Prerequisite: Because of the changing subject matter to be treated in this course, permission of the instructor is required. Students will have an opportunity to examine in detail some questions of significance in the field of urban and/or regional planning. See the Schedule of Classes for the specific topics to be offered each semester.

**URSP 761 Planning Studio I**

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: All core courses except URSP 762 and 794. Involves students as a group in a community-based planning project.

**URSP 762 Planning Studio II**

Semester course; 1 lecture and 10 laboratory hours. 6 credits. Prerequisite: URSP 761. Requires individual students to apply theory and methodology gained from the core courses to solve selected planning problems. With the consent of instructor and department chair, URSP 764 Thesis or Projects is acceptable substitute. Extended time may be granted with a grade of "PR." Final grade of "A," "B," "C," "D" or "F" will be awarded upon completion.

**URSP 764 Thesis or Projects**

2-6 credits. Prerequisites: Permission of instructor and appropriate research methods course. Planning, preparation, completion, and presentation of a thesis or project. URSP 764 is an acceptable substitute for URSP 762 Planning Studio II. Consent of instructor and chair required for this substitution.

**URSP 794 Planning Practicum Seminar**

Semester course; 3 credits. Provides an opportunity for a structured analysis of the student's internship experience. Professional skills are enhanced through lectures, assignments and discussions.

**URSP 797 Directed Research**

1-3 credits. May be repeated for a maximum of six credits. Prerequisites: Permission of instructor and graduate standing. Independent research into planning problems, issues, and theories.

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## Additional graduate courses in the College of Humanities and Sciences

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**ANTH 551 Anthropology for the Museologist**

Semester course; 3 lecture hours. 3 credits. A discussion and investigation of contemporary anthropological themes and questions and identification of how they can be depicted with museum materials. Students are expected to develop a research design for an exhibit.

**FREN 500 French for Graduate Students**

Semester course; 3 lecture hours. 3 credits. This course is designed to prepare graduate students for the reading knowledge examination for higher degrees. Each graduate department will determine the nature and form of certifying examination.

**FREN 501 French Communication**

Semester course; 1-4 lecture hours. 1-4 credits. An intensive study of communication in French. Variable credits; primarily oral, written, and listening skills.

**FREN 511 French Civilization**

Semester course; 1-4 lecture hours. Variable; 1-4 credits. Prerequisite: Functional fluency in French since the class will be taught in French. A comprehensive study of the civilization and culture of France and its global expressions.

**FRLG 510 Language Learning and Technology**

Semester course; 3 lecture hours. 3 credits. Introduces the variety of ways technology can be used to enhance language instruction and student learning. Targeted technologies include audio/visual media, language learning software, the Internet and multimedia resources. Attention also will be given to considerations of learning style, curricular integration and enhancement.

**FRLG 591 Topics in Foreign Languages**

Semester course; 1-4 lecture hours. Variable; 1-4 credits. A detailed study of selected topics in one or more of the foreign language or comparative courses offered by the department.

**GEOG 521/URSP 521/ENVS 521 Introduction to Geographic Information Science**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

**GEOG 550 Physical Geography of Virginia**

Semester course; 6 field hours. 3 credits. Field course, traversing the varied physical regions of Virginia with emphasis on the climate, terrain, soils, and vegetation of each region and on the transitional zones in between. Human modification of the physical environment and its consequences are also stressed.

**GEOG 551 Cultural Geography of Virginia**

Semester course; 6 field hours. 3 credits. Field course, traversing the various cultural regions of Virginia with emphasis on basic economic activities of each area, the cumulative effect of occupation of the regions, and past and present changes in the cultural landscape.

**GEOG 626/URSP 626 GIS Applications for Planners**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: URSP 623. Examines in detail Geographic Information Systems.

**GEOG 680 Geography Workshop**

Semester course; 1 lecture hour or 2 field hours per credit. 1-6 credits. Lecture, laboratory, and/or field course; may be repeated with different topics to maximum of nine credits. An intensive study of a particular area or topic in geography. See the Schedule of Classes for specific workshops to be offered each semester.

**GRMN 500 German for Graduate Students**

Semester course; 3 lecture hours. 3 credits. This course is designed to prepare graduate students for the reading knowledge examination for higher degrees. Each graduate department will determine the nature and form of the certifying examination.

### GRMN 502 German Communication

Semester course; 1-4 lecture hours. Variable; 1-4 credits. An intensive study of communication in German. The content of this course will emphasize primarily oral, written, and listening skills.

### GRMN 512 German Civilization

Semester course; 1-4 lecture hours. Variable; 1-4 credits. Prerequisite: Functional fluency in German since the class will be taught in German. A comprehensive study of the civilization and culture of Germany and its global expressions.

### HUMS 591 Special Topics

Semester course; variable; 1-4 credits. Specialized topics in the liberal arts and sciences designed to provide an overview of a topic not provided by an existing course or program. May be repeated with different content. May be multidisciplinary.

### INTL 514/NURS 514 International Perspectives on Community Health in Developing Countries

Semester course; 1 lecture and 2 laboratory hours. 3 credits. This course may be taken for a maximum of six credits in two different world areas. Open to undergraduate (junior or senior level) and graduate students. Explores the impact of national and international policy decisions on the health and well-being of individuals and communities (country varies semester to semester). Examines the relationship of cultural beliefs and values on health-seeking behaviors. Allows students to become immersed in a culture different than their own. Evaluates the impact of international conflict and economic development on the health status of the community. See Schedule of Classes for location.

### INTL 591 Topics in International Studies

Semester course; 1-3 lecture hours. Variable, 1-3 credits. May be repeated for a maximum of 12 credits. Open to undergraduate (junior or senior level) and graduate students. A detailed study of selected topics in one or more geographic areas or comparative studies of global phenomena. See the Schedule of Classes for specific topic to be offered during a given semester.

### PHIL 521, 522 Aesthetics

Semester courses; 3 lecture hours. 3, 3 credits. A critical survey of aesthetics from antiquity to the 20th century. First semester: antiquity to the Renaissance; Second semester: the Renaissance to the present. Topics to be considered include the nature of art, aes-

thetic experience, the aesthetic analysis in the arts of painting, music, architecture, and the motion picture.

### PHIL 591 Topics in Philosophy

Semester course; variable; 1-4 credits. Prerequisite: Written permission of instructor or graduate standing. A graduate level, in-department study of an individual philosopher, a particular philosophical problem or a narrowly defined period or school. See Schedule of Classes for specific topic to be offered each semester.

### PHIL 592 Independent Study

Semester course; 1-4 credits. An independent study course to allow graduate students to do research, under the direction of a professor qualified in that field, in an area of major interest.

### PHIL 601 Principles of Ethics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing. An examination of major ethical theories and their application to contemporary issues in medicine, science, and public policy.

### PHIL 602 Biomedical Ethics

Semester course; 3 lecture hours. 3 credits. An examination of ethical theory and its application to moral problems in medicine and biotechnology.

### PHIL 635 Philosophy of the Social Sciences

Semester course; 3 lecture hours. 3 credits. A philosophical study of the nature of science and scientific explanation, with emphasis upon the social sciences. Topics include the philosophical analysis of objectivity in the social sciences, theories of human action, and the relation of social sciences to the physical sciences.

### PHIL 683/PADM 683 Administrative Ethics

Semester course; 2 or 3 hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

### PHIL 691 Topics in Philosophy

Semester course; variable; 1-4 credits. Prerequisite: Written permission of instructor or graduate standing. A graduate level, in-depth study of an individual philosopher, a particular philosophical problem, or a narrowly defined period or school. See the Schedule of Classes for specific topic to be taught each semester.

### PHIL 692 Independent Study

Semester course; variable; 1-4 credits. Open to graduate students only. An independent study course to allow graduate students to do research, under the direction of a professor qualified in that field, in an area of major interest.

### PHIL 713/PPAD 713 Ethics and Public Policy

Semester course; 3 lecture hours. 3 credits. Doctoral students only. An examination of the main theories of morality and justice. These theories' implications for public policy will be discussed.

### POLI 553 The Military in Politics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. The course will examine the pervasive character and growing importance of the military in the governmental and policymaking processes. It will include a study of the history of civil-military relations, and the changing dynamics of the relationship that occurs in response to changes in social and political contexts and as a result of technological changes in the military and warfare.

### POLI 591 Topics in Political Science

Semester course; 3 credits. An in-depth study of a selected topic in political science in a seminar environment. Intended for small groups of students interested in examining issues and problems related to aspects of the political processes.

### RELS 592 Independent Study

Semester course; 1-4 credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration for the course. Open only to graduate students. An independent study course to allow qualified graduate students to do research in an area of major interest.

### SPAN 503 Spanish Communication

Semester course; 1-4 lecture hours. Variable; 1-4 credits. An intensive study of communication in Spanish. The content of this course will emphasize primarily oral, written, and listening skills.

### SPAN 513 Spanish Civilization

Semester course; 1-4 lecture hours. Variable; 1-4 credits. Prerequisite: Functional fluency in Spanish since the class will be taught in Spanish. A comprehensive study of the civilization and culture of Spain and its global expressions.



# School of Allied Health Professions

## Graduate Programs

The School of Allied Health Professions was established on Jan. 1, 1969, to provide an administrative structure for existing educational programs in allied health disciplines and to direct the development of new programs in response to the growing need for allied health manpower. At the outset, the school incorporated existing educational programs for hospital administration, medical technology, physical therapy and radiologic technology. A program for nurse anesthesia was inaugurated as a separate department in 1969; an existing educational program in occupational therapy was transferred administratively to the School of Allied Health Professions in 1970, and a teaching program in patient counseling formerly based within MCV Hospitals was integrated with the school, also in 1970. A doctor of philosophy program in health services, organization and research, the first doctoral program for the School of Allied Health Professions, was introduced in 1982. In 1985, the existing Department of Gerontology was transferred administratively to the School of Allied Health Professions. In June 1988, an executive master's program in health administration was introduced. An entry-level master's degree professional program in physical therapy was initiated for students matriculating in August 1989. On July 1, 1994 the Department of Rehabilitation Counseling was transferred from the School of Community and Public Affairs to the School of Allied Health Professions. A distance-learning, interdisciplinary doctoral program — the Ph.D. in Health Related Sciences — began accepting students in the fall 1998 semester. This program was developed in response to the national demand for doctorally prepared faculty and practitioners in the allied health professions. Recent program developments include the initiation of an entry-level masters degree program in occupational therapy and the subsequent closure of their undergraduate program (1998); the initiation of a master of science degree offering in the Department of Patient Counseling (2000); the start of a joint degree program, the M.D./M.H.A., offered by the Department of Health Administration and the School of Medicine (2001); and the initiation of the professional doctor of physical therapy degree (2002).

### Programs

Graduate programs in this school and the degrees conferred on their graduates are:

#### School of Allied Health Professions

Ph.D. in health related sciences

#### Department of Gerontology

Master of science

#### Department of Health Administration

Master of health administration

Master in health administration and juris doctor degrees cosponsored by the T. C. Williams School of Law at the University of Richmond

Master of science in health administration (Professional M.S.H.A. Online Program)

Ph.D. in health services organization and research  
Doctor of Medicine and Master of Health Administration degrees cosponsored by the School of Medicine

#### Department of Clinical Laboratory Sciences

Master of science

#### Department of Nurse Anesthesia

Master of science in nurse anesthesia

#### Department of Occupational Therapy

Master of science in occupational therapy  
Master of science

#### Program in Patient Counseling

Master of science

#### Department of Physical Therapy

Master of science

Ph.D. in conjunction with the departments of Anatomy or Physiology

#### Department of Rehabilitation Counseling

Master of science

Master of science in rehabilitation counseling and certificate in aging studies

Professional certificate programs currently are offered by the following departments and programs.

#### Department of Gerontology

Certificate in aging studies

Certificate in aging studies and master of social work (jointly with the School of Social Work)

#### Program in Patient Counseling

Postgraduate certificate in patient counseling

1200 E. Broad St. • P.O. Box 980233  
Richmond, VA 23298-0233  
(804) 828-7247 • Fax (804) 828-8656  
<http://www.sahp.vcu.edu>

#### Cecil B. Drain

Dean  
B.S.N., M.S., N.S., Ph.D.

#### Dolores G. Clement

Associate Dean  
B.A., M.A., M.S., Dr.P.H.

#### Debra A. Ropelewski

Assistant Dean for Fiscal Affairs  
B.S., M.B.A.

#### Jeffrey R. Lodge

Director of Information Systems  
B.A.

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Joint Master of Science in Patient Counseling and Master of Divinity with the School of Theology at Virginia Union University and the Baptist Theological Seminary in Richmond

#### Department of Rehabilitation Counseling

Postgraduate certificate in professional counseling

## Philosophy

The faculty of the school is committed to offering, through the establishment and maintenance of rigorous standards of excellence, educational programs that will prepare students for professional careers in the allied health disciplines. Development of professional attitudes, emotional maturity and ethical behavior of students is a vital component of the educational process. It is essential that students gain a deep respect for the dignity of man and the inherent rights of patients and others who receive services. The programs are designed to include not only the development of skills to assure excellence in quality of health care, but also factual knowledge and experiences that will provide the basis for continuing intellectual and professional growth.

Community services of the school and faculty include continuing education, consultative resources and participation in all pertinent areas of health care. An integral part of these efforts is to stimulate and sponsor research activities in the allied health disciplines represented within the school and to encourage interdisciplinary research.

## Facilities

Departments and programs in the School of Allied Health Professions presently are housed in the Randolph-Minor Annex, McGuire Hall, Lyons Building, V.M.I. Building, West Hospital, the William Grant House and the West Grace Street Housing Building.

## Licensure/certification

Graduates of most of the programs offered in the School of Allied Health Professions are required or eligible to take national/state certification or licensure examinations. Requirements of licensing and certifying agencies vary. Some licensure and certification agencies consider individuals convicted of a felony ineligible for licensure or certification. For information, prospective students should contact the licensure or certification agency for the specific allied health discipline.

## Accreditation

The School of Allied Health Professions is an institutional member of the American Society of Allied Health Professions and the Virginia Association of Allied Health Professions. All of its programs are approved or accredited by the appropriate national professional or educational organizations.

## Attendance regulations

The faculty considers attendance at lectures, laboratories and other functions a requisite to the successful acquisition of the knowledge and skills required of the professional. Hence, the faculty cannot condone absence without good reason from any regularly scheduled educational experience. At the beginning of each course, instructors relate to their classes the policy of the department concerning the attendance regulations for that semester. The nature of make-up work in the event of absence will be the prerogative of the instructor.

## Graduate programs

Graduate degree and certificate program offerings in the School of Allied Health Professions are designed as basic professional or advanced-level programs. Accreditation requirements for the individual programs preclude the establishment of general admission prerequisites, registration dates, and course and degree requirements beyond those of the School of Graduate Studies.

It is the intent that these regulations and procedures for each program ensure the selection of applicants whose motivation, ability, character and health status qualify them to pursue graduate study successfully. Specific information may be found in the departmental presentations in this section or are available from departmental graduate coordinators.

## Student performance and behavior

The goals and objectives of the School of Allied Health Professions and its component departments and programs relate to the education of persons preparing for professional careers in the allied health disciplines. An integral requisite of students and practitioners is an undeviating acceptance of a professional attitude and pride that will

motivate them to adhere to a code of professional ethics and to develop fully their competencies for practice.

The suitability of student performance and behavior relating to these professions and to the consumers of health care is a paramount concern of the administration and faculty of this school. To assure a quality of educational and clinical preparation for its graduates, the following statement is promulgated:

If, in the judgment of the faculty/administration of the School of Allied Health Professions, a student is not considered suitable for emotional, professional or related reasons, the student's academic status may be appropriately altered.

If any questions arise regarding the standards of performance or behavior, it is the responsibility of students to apprise themselves of acceptable character and conduct requirements prior to matriculation in the designated department or program.

## Graduate courses in allied health professions (ALHP)

### ALHP 573 Teaching in Health Professional Schools

Semester course; 3 lecture hours. 3 credits. Section 01. Study of the relationships between health education and higher education in general, current essentials, standards in education for the health professions and theoretical approaches to the implementation of these standards in both academic and clinical learning. Emphasis will be placed on modes of adapting to future needs of the professions.

### ALHP 582 Supervision in the Allied Health Professions

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study of the supervisory process and staff development, training in communication and interpersonal skills, and public relations within the health facility.

### ALHP 591 Special Topics

Semester course; 1-4 credits. Prerequisite: Permission of instructor. Interdisciplinary study through lectures, tutorial study or independent research of selected topics not provided in other courses.

### ALHP 594 Health Education Practicum

Semester course; 1 lecture and 4 laboratory hours. 1-6 credits. Prerequisite: ALHP 573. Preparation, presentation and evaluation of selected educational experiences in the appropriate graduate program. Section 01: General; Section 02: Nurse Anesthesia; Section 03: Clinical Laboratory Sciences.

### ALHP 596 Supervisory and Administrative Practicum in Allied Health Clinics

Semester course; 60 clinical hours per credit. 1-9 credits. Prerequisite: Permission of instructor. The course is

designed for the student who will be assuming supervisory and administrative roles. Areas to be covered include clinical personnel management, budgeting and ordering of materials and equipment, consultation with physicians, developing and troubleshooting clinical methods, designing job descriptions and implementation of quality control programs. Section 01: Clinical Laboratory Sciences Section 02: Physical Therapy.

## Doctoral Program in Health Related Sciences

Clement, Dolores G., Associate Professor and Associate Dean, School of Allied Health Professions Dr.P.H. University of California Health policy and administration.

Faculty are drawn from the graduate faculty of all of the other departments in the school. Refer to the subsequent departmental listings of faculty.

## Overview

The Doctor of Philosophy Program in Health Related Sciences in the School of Allied Health Professions was designed as a distance learning program with the cooperation and commitment of the nine departments of the school: Clinical Laboratory Sciences, Gerontology, Health Administration, Nurse Anesthesia, Occupational Therapy, Patient Counseling, Physical Therapy, Radiation Sciences and Rehabilitation Counseling.

The mission of the School of Allied Health Professions is to serve as an international leader in the education of excellent, innovative and responsible allied health professionals. Educational formats that are technologically advanced and accessible to students through on-campus and distance learning are emphasized throughout all programs in the school. In addition, the school promotes excellence in health care service, and encourages collaborative research that generates state-of-the-art and specialized knowledge.

This doctoral program involves a four-year course of study. It is designed to meet the critical need for doctorally prepared allied health professionals across the nation, specifically in the areas of teaching, research and administration. The departments of the School of Allied Health Professions offer a doctoral curriculum with a common interdisciplinary core of courses and eight specialty tracks germane to the disciplines of the participating departments. The ninth department of the school is Patient Counseling. This department is par-

ticipating by teaching the course in ethics as part of the doctoral program.

## Program instructional goals

The goal of the doctoral program in health related sciences is to provide experienced health professionals with advanced knowledge and skills so that they may assume positions in teaching, research and administration upon graduation. This doctoral program emphasizes both an interdisciplinary and multimedia focus, drawing from resources across the university.

The overall objectives of this doctoral program are to produce scholars who have:

- the ability to understand, analyze, design, execute and evaluate research and practice in the allied health sciences, with particular in-depth understanding in the chosen area of specialization,
- the ability to translate research knowledge and principles into applied practice perspectives and skills,
- the ability to teach the current principles and content of the allied health sciences,
- the ability to do research, practice and teach in the area of interdisciplinary health care practice,
- the ability to continually examine current and future changes in the allied health disciplines from an interdisciplinary perspective,
- a demonstrated knowledge and understanding of professional and ethical responsibility and conduct in the allied health professions, and
- a demonstrated knowledge and understanding of ethnic issues and cultural diversity in health care delivery and health policy.

## Facilities

The administrative offices for the program are located on the MCV Campus, at 1200 E. Broad St. (West Hospital, First Floor, East Wing). The program's state-of-the-art computer laboratory is located in Tompkins-McCaw Library, at 509 N. 12th St.

## Program admission

### Admission criteria

Admission to the program, which is open to students with clear career goals in the health related sciences, is limited and competitive. Therefore, work experience in a health related field is encouraged.

Applicants to the program must meet the following admission criteria:

- have an earned master's degree in an academic or allied health related field from an accredited college or university,
- have a minimum cumulative GPA of 3.3 on their master's level work,
- have completed a graduate course in statistics with a grade of "B" or better,
- have earned a minimum combined score of 1100 on the verbal and quantitative sections of the Graduate Record Exam (GRE) or a minimum score of 55 on the Miller's Analogies Test (MAT). Tests must have been taken within the past five years,
- when applicable, have a minimum Test of English as a Foreign Language (TOEFL) score of 600,
- demonstrate a record of professional competency/success, and
- articulate clear professional/educational goals and written communication skills through the submission of a written essay.

Enrollment in the program is open to qualified persons without regard to age, race, sex, religion, disability or national origin. Admission requirements are in compliance with all applicable federal and state statutes, orders and regulations, and university guidelines.

## Admission procedures

Prior to reviewing an application for admission, the program must receive:

- a completed application form from the applicant, including:
  - three letters of recommendation, two of which are preferably from sources qualified to assess the candidate's academic potential,
  - a written essay that discusses career goals and the manner in which this doctoral program will enhance those goals, and what the applicant expects to contribute to this program, and
  - a curriculum vitae,
- official transcripts indicating completion of baccalaureate and master's degrees (or equivalent) from an accredited college or university, and
- GRE or MAT scores.

Incomplete packages may not be reviewed. Materials are sent to the School of Graduate Studies for processing and then forwarded to the School of Allied Health Professions. Once received in the school, the application is reviewed for completeness. Applicants with incomplete files will

be contacted regarding the missing materials. Incomplete files will be held in the director's office until all materials are received.

Completed folders will be sent to the respective departmental representative of the School of Allied Health Professions Doctoral Program Advisory Committee (D-PAC). Departments will then rank qualified applicants and, based on a review of the file, a personal interview will be scheduled at the department's discretion for their top candidates. Following the departmental ranking, all files will be returned to the director's office.

The D-PAC will meet to select and recommend the incoming class, and to develop an alternate list (total applicant pool ranked by qualifications). The director and the dean of the School of Allied Health Professions are responsible for the final decision.

Applicants will be notified by the dean of graduate studies regarding the admission decision and of the deadline for their acceptance of the offer and holding fee.

### **Part-time status**

The program will be open to part-time students, although students are encouraged to enroll full time.

### **Advising**

Upon admission to the program, students will be assigned an interim adviser to guide them through the core courses and assist them as they consider their area of research. All program advisers will have an earned doctorate and be a member of the university's graduate faculty.

Students may change their interim adviser as their programs of study and interests evolve, if approved by the program director. Although discouraged, some students may desire to switch their area of specialization (changing from the department through which they were initially admitted to the program.) Students desiring to change specialization areas must petition the doctoral program director. The petition must be approved by the program director, the Doctoral Program Advisory Committee and the appropriate department chair. There is no guarantee that the applicant will be accepted into the new specialization area.

After successful completion of the comprehensive examinations, students will choose a dissertation chair who will serve as adviser and guide them through their research/dissertation process.

## **Program continuation and completion requirement**

### **Continuation requirements**

After admission to the Ph.D. program, the student must maintain a minimum cumulative GPA of 3.0 in all course work completed at VCU. A student who falls below that minimum will have one semester to remedy the deficiency. Even with an overall GPA of 3.0 or better, a student may earn no more than two (six credit hours) grades of "C." A student who receives a grade of "D" or "F" will be reviewed for continuation in the program by the department of their specialization.

Students must register for at least one credit hour each fall and spring semester for continuation in the program. A student who fails to register must have advance approval to do so or will be dropped automatically from the program and must reapply for reinstatement. The maximum time to complete all of the requirements for the degree is seven calendar years from the date of entry into the program.

### **Course transfer or waiver**

A maximum of 25 percent of the course work other than research may be transferred from another VCU program or outside institution and applied toward the Ph.D. course requirements. Transfer and waiver credit is given at the discretion of the program director after consultation with appropriate faculty members, subject to university approval. Courses taken as requirements for other degrees are not transferable. A waiver may be warranted if an equivalent course was taken. However, another course must be substituted for the waived course in order to fulfill the requisite credit hours needed for degree completion.

### **Comprehensive examination**

The purpose of the comprehensive examination is to provide a vehicle through which students can demonstrate the ability to integrate their educational experience by adequately addressing complex questions pertinent to the current and developing knowledge of the allied health fields. Students are eligible to take each of the two comprehensive examinations upon successful completion of the appropriate core course work. Exams must be taken within six months of completing each core.

Two written examinations will be administered, one for the common interdisciplinary core and one for the research methods core. A three-member graduate faculty

committee will develop and administer each exam. This committee will be made up of two members of the Core Advisory Committee and one member appointed by the program director. Each exam will be offered once in the fall semester, and once in the spring semester. Prior to completion of the semester in which the student becomes eligible to take each exam, he/she must submit a formal statement of intent to the program director.

Students who receive a failing grade on their initial attempt will have one opportunity to repeat each comprehensive examination. Failure to pass an exam on the second attempt will result in termination from the program.

### **Program completion requirements**

The doctor of philosophy degree is awarded after (1) the minimum 57 credit hours of course work are completed; (2) comprehensive exams are passed; and (3) either a dissertation is written and defended orally, or three first-author articles of publishable quality on research undertaken by the doctoral candidate once enrolled in the program are written and defended orally. The journal articles will be scrutinized for quality of scholarship by an internal research committee, headed by the student's research adviser. All three articles must be approved by the internal research committee prior to submission.

### **Curriculum structure**

The proposed curriculum is designed to take four years to complete. Students spend the first three years (each comprised of two six-month-long semesters) completing course work. The final year is spent developing the doctoral dissertation. Research components are present in each year of the program and a research emphasis is present throughout the entire curriculum. The student is required to designate the area of intended research in her/his specialization area in the first year.

Each of the six course work semesters is composed of both on- and off-campus components. On-campus sessions, scheduled during the end of June and beginning of July and the end of December/beginning of January, will employ a rather traditional mix of educational technologies (e.g., lectures, seminars and assigned reading). During the off-campus component of each semester, students pursue their studies employing a wide variety of innovative educational technologies (e.g., computer

conferencing, computer-aided instruction, videotape packages and programmed instructional material), in addition to assigned readings and the completion of various assignments and projects.

The program curriculum consists of a total of 57 credit hours (24 credits of common interdisciplinary core courses, 12 credits of research methods core courses, nine hours of specialty track courses, and 12 hours of dissertation research). The courses, arranged by focal area are:

	credits
<b>Common interdisciplinary core</b>	
ALHP 701 Health Services Delivery Systems	3
ALHP 702 Finance and Economic Theory for Health Care	3
ALHP 704 Health Care Policy and Political Theory	3
ALHP 708 Ethics and Health Care	3
ALHP 710 Curriculum Design for Health Care Professionals	3
ALHP 711 Multimedia Technology in Health Sciences Curriculum Design and Communications	3
ALHP 716 Grant Writing and Project Management in Health Related Sciences	3
ALHP 718 Health Informatics	3
	24
<b>Research methods core</b>	
ALHP 760 Biostatistical Methods for Health Related Sciences	3
ALHP 761 Health Related Sciences Research Design	3
ALHP 762 Multivariate Statistical Methods for Health Related Sciences Research	3
ALHP 763 Clinical Outcomes Evaluation for Health Related Sciences	3
ALHP 764 Advanced Methods for Health Sciences Research (elective, 3 credits)	
	12
<b>Specialty track</b>	
ALHP 781 Doctoral Seminar in Health Related Sciences	3
ALHP 792 Independent Study	3
ALHP 793 Research Practicum	3
	9
<b>Dissertation research</b>	
ALHP 890 Dissertation Seminar	3
ALHP 899 Dissertation Research	9
	12

Note: All three of the specialty track courses and the dissertation research courses are taken in one of the following areas, and each of the departments have curricular section numbers for each of the respective courses (ALHP 781, ALHP 792, ALHP 793 and ALHP 899):

Section 001 Clinical Laboratory Sciences  
Section 002 Gerontology

Section 003 Health Administration  
Section 004 Nurse Anesthesia  
Section 005 Occupational Therapy  
Section 006 Physical Therapy  
Section 007 Radiation Sciences  
Section 008 Rehabilitation Counseling

## Dissertation and published research requirements

### Admission to candidacy

Students are eligible to begin their dissertation upon certification by the program director, in writing, that all pre-dissertation/research requirements, including the comprehensive examinations, have been satisfied and that the student is prepared to proceed with the dissertation/research project. Copies of the certification will be forwarded to the student, the student's formal program adviser, and the dean of the School of Allied Health Professions. After admission to candidacy, students will proceed to propose, complete and defend their dissertation or three journal articles research requirement.

### Enrollment requirement

Students are required to maintain continuous enrollment in ALHP 899 Dissertation Research until completion of the requirements, including the defense process. A minimum of three credit hours per semester are required until nine credits are accumulated, after which only one credit per semester is required unless otherwise specified by the student's dissertation chair.

### Dissertation/Research Committee

After successful completion of the comprehensive exam, the student nominates a Dissertation/Research Committee and the dissertation/research director submits the nominations in writing to the program director. Such committees will consist of a minimum of four graduate faculty members, one of whom will be outside the student's specialty track. The program director will provide written approval of the Dissertation/Research Committee and clear such appointments with the appropriate administrative officials.

### Dissertation/research standards

The dissertation/publishable research articles must represent independent research and should be based on an original research question or hypothesis. Generally, dissertations/publishable research articles

will demonstrate the student's ability with empirical research, adhering to canons of (1) logic in conceptualization and design, (2) valid and reliable measurement, (3) appropriate analytic technique and (4) appropriate interpretation of results. Studies should be based on a formal theoretical or conceptually explicit framework for investigating a question or testing a hypothesis relevant to the allied health field.

### Tuition and fees

Graduate tuition and fees will be assessed in accordance with rates approved annually by the VCU Board of Visitors. In addition to tuition, a program-specific fee is assessed for this distance learning program. Tuition and fees include all direct program costs and the use of the university's computing systems. An additional fee may be charged for learning materials distributed during a course.

### Computer requirements

Students are encouraged to have a working knowledge of Word for Windows 95. All students must have access to a contemporary IBM compatible personal computer equipped with a printer and a 28.8 baud modem. Although students can use a personal computer at the office, it is strongly recommended that they have one at home.

### Financial aid

Students must apply directly to the financial aid office for consideration. In addition, when other support is available to students, all will be notified of the eligibility criteria and application procedures.

### Due process

All appeals to decisions based on this document are made to the program director. In the event that satisfactory resolution is not attained, the next level of appeal is the dean of the School of Allied Health Professions. Students in the program are governed by the School of Allied Health Professions Student Academic Appeal Policy and Procedures document, which was developed in compliance with university guidelines. Exception to any of the policies and procedures identified in this document require the written consent of the program director and, when necessary, the dean of the school.

## **Graduate courses for the Doctoral Program in Health Related Sciences (ALHP)**

### **ALHP 701 Health Services Delivery Systems**

Semester course; 3 credits. Examines the structure and function of the U.S. health-care delivery system, the concepts and processes of health and illness, the institutional and individual providers of health services and related theory. Focuses on interdisciplinary care. Emphasizes meeting the unique needs of ethnically and culturally diverse populations.

### **ALHP 702 Finance and Economic Theory for Health Care**

Semester course; 3 credits. Focuses on foundational concepts of micro-economic theory and their application in analyzing health care; understanding the structure and dynamics of health-care markets; and on monitoring and controlling the allocation of resources within health organizations. Emphasizes each of the health-care disciplines and how finance and economics affect the practice of delivery and evaluation.

### **ALHP 704 Health Care Policy and Political Theory**

Semester course; 3 credits. Presents a framework grounded in political theory to understand the emerging health-care system and the politics of multiple health caregivers. Presents a framework for understanding health policy in terms of the regulatory environment, developing initiatives and emerging trends of allied health delivery. Assists students in building a program of research in health policy.

### **ALHP 708 Ethics and Health Care**

Semester course; 3 credits. Applies the principles of biomedical and health-care ethics to develop a more informed understanding of ethical decision making in the formulation of health-care policy as well as within the clinical environment. Focuses on utilizing and searching biomedical ethics literature, current issues in biomedical ethics, the discipline and process of ethical reflection and case consultation.

### **ALHP 710 Curriculum Design for Health Care Professionals**

Semester course; 3 credits. Analyzes the various curriculum delivery systems and teaching strategies. Emphasizes the appropriate use of instructional design delivery strategies and evaluation of curricular outcomes with application to allied health professionals and health related sciences courses.

### **ALHP 711 Multimedia Technology in Health Sciences Curriculum Design and Communications**

Semester course; 3 credits. Examines the design and use of current multimedia technology in the teaching of health sciences curriculum. Emphasizes Web course development, the development of modular video-conferencing programs, current and emerging electronic technologies. Integrates teaching theory and adult learning perspectives throughout.

### **ALHP 716 Grant Writing and Project Management in Health Related Sciences**

Semester course; 3 credits. Examines fundamentals of allied health grant writing and proposal preparation in the health related sciences, including funding source determination, responding to an RFP, basic elements of

a proposal, proposal review procedures and allocation processes. Requires development of a complete proposal and critique of existing proposals.

### **ALHP 718 Health Informatics**

Semester course; 3 credits. Analyzes current information and management systems from an allied health sciences perspective. Emphasizes knowledge representation in health care, information needs, storage and retrieval, clinical information systems, standards of health information management and the evaluation of information management systems. Stresses the efficient and innovative use of technology.

### **ALHP 760 Biostatistical Methods for Health Related Sciences**

Semester course; 3 credits. Examines basic concepts and techniques of statistical methods, including the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals, and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; and correlation and regression analysis.

### **ALHP 761 Health Related Sciences Research Design**

Semester course; 3 credits. Covers the design of experimental and quasi-experimental studies in the health-care field. Emphasizes issues related to measurement, validity of designs, sampling and data collection. Focuses on the logic of causal inference, including formulation of testable hypotheses, and the design, methods and measures that facilitate research.

### **ALHP 762 Multivariate Statistical Methods for Health Related Sciences Research**

Semester course; 3 credits. Examines multivariate statistical analysis and evaluation research methods with application to health related science research. Emphasizes data reduction techniques, factor analysis, principle components, discriminant analysis and logistic regression to analyze data in the health field.

### **ALHP 763 Clinical Outcomes Evaluation for Health Related Sciences**

Semester course; 3 credits. Prerequisites: ALHP 760, 761 and 762. Prepares students to design, implement and interpret studies that evaluate the outcome and effectiveness of health services delivery. Emphasizes identification of emerging trends in health related sciences research, identification of meaningful research questions based on existing information and the use of primary and secondary data to assess outcomes.

### **ALHP 764 Advanced Methods for Health Sciences Research**

Semester course; 3 credits. Examines the application of multivariate statistical analysis and evaluation methods to health related sciences research. Emphasizes advanced statistical methods (e.g., LISREL, Event History Analysis) and design to analyze panel data in the health field. Elective course.

### **ALHP 781 Doctoral Seminar in Health Related Sciences**

Semester course; 3 credits. Prerequisite: Permission of instructor. Student's desired topic of study must be identified and approved prior to enrollment. Studies specific topics in the area of the student's specialty track.

### **ALHP 792 Independent Study**

Semester course; 1-6 credits. Prerequisite: Permission of instructor. Offers special individual study or research leading toward investigation in specialty track. Conducted under the guidance of a faculty adviser. May be repeated for a maximum of six credits.

### **ALHP 793 Research Practicum**

Semester course; 3 credits. Offers supervised investigation of selected problems in the area of the student's specialty track. Includes conducting and analyzing field research.

### **ALHP 890 Dissertation Seminar**

Semester course; 3 credits. Deals with general purpose, content and functions of the dissertation process related to the student's specialty track. Leads to the preparation of dissertation proposal.

### **ALHP 899 Dissertation Research**

Semester course; variable credit. Minimum of nine semester hours required for Ph.D. degree. Prerequisites: Completion of required course work and comprehensive examination. Covers dissertation research under the direction of a faculty adviser.

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## **Department of Clinical Laboratory Sciences**

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Lindsey, Barbara J., Associate Professor and Department Chair  
M.S. Medical College of Virginia of Virginia Commonwealth University

Nadder, Teresa S., Associate Professor and Assistant Department Chair  
Ph.D. Medical College of Virginia of Virginia Commonwealth University  
Immunology, immunohematology.

Korzun, William J., Associate Professor  
Ph.D. Virginia Commonwealth University  
Clinical chemistry, instrumentation.

Prentice, Katherine A., Assistant Professor  
M.A. Central Michigan University  
Management, clinical coordinator.

Sauer, Ronald L., Associate Professor  
M.A. University of California  
Microbiology.

## **History**

The graduate program leading to a master of science degree in clinical laboratory sciences was started in 1967 to provide advanced education for certified medical technologists/clinical laboratory scientists.

In 1981, the program was modified to accept part-time students and, in 1985, to allow candidates holding a degree in another area of science to obtain graduate education in clinical laboratory sciences.

## **Philosophy**

The Department of Clinical Laboratory Sciences supports the philosophy and

mission of the university and the School of Allied Health Professions. The departmental graduate program is dedicated to enhancing and promoting clinical laboratory science. By providing advanced theoretical and technical education, the program serves to maintain and update the competency of laboratory professionals and to prepare students to assume roles as laboratory supervisors, university educators and researchers. A mature, responsible approach to the acquisition of knowledge is cultivated in order to establish continuing intellectual growth and an enthusiasm for the profession.

## Objectives

The objectives of the Department of Clinical Laboratory Sciences master's program are to:

- provide the student with a superior, yet flexible, course of advanced study in clinical laboratory sciences,
- prepare the student to evaluate critically and to produce future advances within laboratory sciences,
- foster the continued development of interpersonal communication skills and ethical principles,
- develop and promote strategies for life-long learning and encourage continued professional growth through research, education and active participation in professional societies, and
- provide society and the commonwealth of Virginia with a source of highly competent professional laboratorians capable of functioning effectively in leadership roles within the field of clinical laboratory sciences.

## Facilities

The Department of Clinical Laboratory Sciences is located in the Randolph-Minor Annex Building on the MCV Campus. All faculty and clerical offices are located in this facility, as well as student classrooms, general teaching laboratory, computer facilities and a student lounge/reading room.

## Financial aid

Students must apply through the financial aid office for assistance. Refer to the general section on financial aid in this bulletin for details of the programs available. In addition, there are limited funds from departmental and professional sources. When this support is

available, all students will be notified of the eligibility criteria and application procedures.

## Admission requirements

In order to meet the needs of all individuals interested in continuing their education in the field, the Department of Clinical Laboratory Sciences has modified its graduate curriculum to accommodate a diversified group of candidates, including full- and part-time students. The program is highly flexible, allowing students to select course work that meets their specific needs once the basic program requirements have been met.

The general entrance requirements for the Master of Science in Clinical Laboratory Sciences (for the Advanced and Categorical tracks) are:

- baccalaureate degree from an accredited college or university with a major in: clinical laboratory sciences (medical technology) – Advanced track; biology or chemistry – Categorical track,
- minimum undergraduate GPA of 2.7 on a 4.0 scale for at least the last two years of undergraduate work,
- minimum TOEFL of 550 for international students whose native language is not exclusively English,
- satisfactory scores on the GRE, and
- recommended, but not required, are two letters from employers or recent instructors addressing academic potential.

The entrance requirements for the Master of Science in Clinical Laboratory Sciences – Accelerated track

- acceptance into the B.S. degree program in Clinical Laboratory Sciences
- completion of 54.5 hours of CLLS professional courses with a minimum GPA of 2.7
- GRE scores

## Guaranteed admission

VCU students participating in the University Honors Program may apply for guaranteed admission to the Master of Science in Clinical Laboratory Sciences Program. Refer to the general section on admissions through honors in this bulletin for details of the program.

The Department of Clinical Laboratory Sciences also has agreements for guaranteed admission into the master of science program with the following institutions: George Mason University, Radford University, Averett University, Ferrum College, Hollins

University, Mary Baldwin College and Roanoke College. The requirements for guaranteed admission are:

- baccalaureate degree from an accredited college or university with a major in clinical laboratory sciences (medical technology), biology or chemistry,
- minimum overall undergraduate GPA of 3.25 and a minimum undergraduate science GPA of 3.0 on a 4.0 scale,
- minimum TOEFL of 570 for international students whose native language is not exclusively English, and
- recommended, but not required, are two letters from employers or recent instructors addressing academic potential;
- GRE is waived for admission decisions. The GRE must be taken within the first enrolled year, but the results are to be used for record keeping purposes only.

## Transfer credit

Students who have earned graduate credit before entering the Department of Clinical Laboratory Sciences' master's program may be permitted, at the discretion of the faculty, to transfer a maximum of six semester hours of credit toward the master of science degree. Transfer credit may be allowed when, in the judgment of the faculty, the applicants have satisfactorily completed course work equivalent to requirements of the graduate curriculum in this department.

## Program options

The department offers three tracks in the master's degree program in clinical laboratory sciences:

- Advanced Master's Track
- Categorical Master's Track
- Accelerated Master's Track

## Advanced Master's Track in Clinical Laboratory Sciences

Students holding a baccalaureate degree in clinical laboratory sciences/medical technology and generalist certification by the National Credentialing Agency for Laboratory Personnel Inc. or the Board of Registry of the American Society for Clinical Pathology are eligible for the advanced master's track. Candidates may specialize and complete a project or thesis in clinical chemistry, hematology, microbiology, immunohematology, molecular diagnostics or immunology. In addition to the basic science requirement, each student will

choose an area of secondary emphasis in biomedical research, education, management or business.

## Categorical Master's Track in Clinical Laboratory Sciences

The categorical master's track is designed for students with a baccalaureate degree in biology or chemistry. This track provides specialized study, including a clinical practicum, in one of the following areas: clinical chemistry, hematology, microbiology or immunohematology. A project or thesis is required. Upon completion of the curriculum, students are eligible to take a national certification examination in the area in which they performed their concentrated study.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://vcu.edu/graduate>.

## Accelerated Master's Track in Clinical Laboratory Sciences

The accelerated master's track integrates graduate and undergraduate coursework and leads to the awarding of a B.S. and M.S. degree simultaneously. The student must complete a minimum of 114.5 undergraduate credit hours including 60 pre-requisite credit hours (see admission requirements for the baccalaureate degree program in Clinical Laboratory Sciences for a list of the specific courses) and 54.5 credit hours of professional coursework in clinical laboratory sciences. A minimum cumulative GPA on CLLS courses of 2.7 and completion of the GRE are required for admission into the graduate portion of the program. The candidate must complete at least 40 additional hours of graduate level course work. Upon completion of the curriculum students are eligible to take the national certification examinations for a CLS/MT generalist. Students pursuing the Accelerated Master's track must initially qualify for admission to the Bachelor of Science program in Clinical Laboratory Sciences. Application materials may be obtained by writing to the Office of Undergraduate Admissions, Medical College of Virginia Campus, Virginia Commonwealth University, P.O. Box 980583, Richmond, VA 23298-0583 or from the Web at <http://www.sahp.vcu.edu/cls>.

## Curriculum

Students in the Advanced Master's and Categorical Master's track are required to

complete a minimum of 34 semester hours to include:

Discipline-specific science	15-19
Seminar	3 (4 recommended)
Education, management or business	3
Computer applications or statistics	3
Scientific inquiry	2
Research	4-6

Specific courses will depend on the individual candidate's choice of specialty. The basic science requirement may be distributed among approved courses listed in this bulletin.

Students with a secondary emphasis in education, management or business may elect to focus on courses in those areas in lieu of the discipline-specific course work. No more than 14 credit hours in the area of secondary emphasis may be applied toward the total minimum requirement.

Categorical master's candidates are required to complete a six-week clinical practicum in their specialty area.

A research study in the form of a thesis or project is required. Students selecting the thesis option complete a minimum of 15 semester hours of discipline-specific sciences and six hours of research; students selecting the project option complete 19 semester hours of discipline-specific sciences and four hours of research.

Full-time candidates require a minimum of two academic years to complete the program. There are no full-time residence requirements. Part-time students must complete all work requirements within five years. An interruption in registration in excess of one semester requires prior approval of the department.

Completion of the Accelerated Master's track includes:

- prerequisite requirement – 60 hours of course work prior to entrance into the bachelor of science program in clinical laboratory sciences (refer to the VCU Undergraduate Bulletin for details of the required courses).
- professional studies requirement – Undergraduate (54.5 credits)
  - CLLS 301-302 Hematology 7.5
  - CLLS 303 Parasitology 1.0
  - CLLS 304 Clinical Microscopy 2.0
  - CLLS 306 Immunohematology 4.5
  - CLLS 307 Introduction to Pathogenic Microbiology 3.0
  - CLLS 308 Pathogenic Microbiology 5.0
  - CLLS 310 Clinical Immunology 4.5
  - CLLS 311-312 Biochemistry 8.0
  - CLLS 314 Clinical Instrumentation 3.0
  - CLLS 337 Clinical Education 1.0
  - CLLS 483 Biochemistry Practicum 3.0

CLLS 485 Hematology Practicum 3.0  
 CLLS 493 Clinical Microbiology Practicum 3.0  
 CLLS 494 Miscellaneous Clinical Practicum 3.0  
 CLLS 496 Blood Bank Practicum 3.0  
 (Refer to the VCU Undergraduate Bulletin for a description of the courses)

- professional studies requirement – Graduate (40 credits)
  - CLLS 580 Education/ Management 3.0
  - BIOS 543 Statistical Methods I 3.0
  - ACCT 507 Fundamentals of Accounting 3.0
  - Education/Management/Business Electives 3.0
  - Discipline Specific Sciences 9.0
  - CLLS 690 Clinical Laboratory Sciences Seminar 1.0
  - OCCT 710 Research Process in Occupational Therapy 3.0
  - CLLS 790 Research in Clinical Laboratory Sciences 3.0
  - Electives 12.0

Full-time candidates require a minimum of five academic years to complete the program. There are no full-time residence requirements. Part-time students must complete all graduate level requirements within five years. An interruption in registration in excess of one semester requires prior approval of the department.

## Graduate courses in clinical laboratory sciences (CLLS)

### CLLS 500 Concepts and Techniques in Clinical Laboratory Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Restricted to candidates in the categorical master's program. Presents the basic theoretical concepts, laboratory techniques and skills employed in the areas of clinical chemistry, hematology, immunohematology and microbiology.

### CLLS 501 Instrumental Methods of Analysis I

Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory and comparison of laboratory instruments are discussed along with the factors affecting their operation. Laboratory exercises are designed to demonstrate the practical applications of the instruments in the research and clinical laboratory. Areas covered include basic electronics, principles of photometry, spectrophotometry, fluorometry, flame emission photometry, atomic absorption spectrophotometry and computerized instrumentation.

### CLLS 502 Instrumental Methods of Analysis II

Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory and comparison of laboratory instruments are discussed along with the factors affecting their operation. Laboratory exercises are designed to demonstrate the practical applications of the instruments in research and clinical laboratory. Areas covered include electrophoresis, chromatography,



particle counters, radio-isotope counters and clinical laboratory automation.

### CLLS 508 Laboratory Diagnosis of Infectious Diseases

Semester course; 3 lecture hours. 3 credits. Applies an organ system approach to the laboratory diagnosis of infectious diseases. Emphasizes diagnostic methods to verify infections because of pathogenic micro-organisms and includes related diagnostic microbiology laboratory issues. Utilizes a distance learning format.

### CLLS 580 Principles of Education/Management

Semester course; 2 lecture and 2 practicum hours. 1-3 credits. Introduces fundamental educational theories and practice, principles of management and employee relations and health-care issues from a global perspective with an emphasis on multicultural diversity. Stresses the application in the clinical laboratory. Requires a practicum in education and in management following the completion of the didactic portion.

### CLLS 595 Clinical Practicum

Semester course; 80-320 clock hours. 1-4 credits. Prerequisite: At least one of the following: CLLS 301-302, 306 and 310, 307-308, 311-312, or by permission of instructor. Individual participation in a hospital laboratory in a selected specialty area: clinical chemistry, hematology, microbiology or immunohematology. Students gain practical experience in the performance of procedures and use of instruments by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision. Based on adviser's recommendation and student's past experience, the course may be taken for less than four credits. Graded as pass/fail.

### CLLS 601 Theoretical Blood Banking

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A comprehensive study of the blood groups in man, including biochemistry, genetics and clinical significance. Topics relating to problems with antibodies to the blood group antigens are discussed.

### CLLS 602 Molecular Diagnostics in Clinical Laboratory Sciences

Semester course; 3 lecture hours. 3 credits. Restricted to CLS advanced M.S. degree students or permission of instructor. Provides the basic principles and techniques of molecular diagnostics and information for establishing a molecular diagnostics laboratory. Examines the utilization of molecular techniques in the clinical laboratory for patient diagnosis and therapy. Emphasizes the use of these techniques in the areas of immunology, microbiology, hematology/oncology, and inherited genetic disorders.

### CLLS 605 Advanced Hematology

Semester course; 2 lecture and 2 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. Discusses advanced laboratory techniques used to analyze blood dyscrasias and hemostatic disorders. Students also may perform related laboratory tests.

### CLLS 610 Interpretative Clinical Hematology

Semester course; 2 lecture hours. 2 credits. Prerequisite: Permission of instructor. Principles of hematopoiesis and related pathological and pathophysiological correlation of hematological disorders are discussed.

### CLLS 690 Clinical Laboratory Sciences Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of current research and topics of interest by the departmental faculty, graduate students and visiting lecturers.

### CLLS 691 Special Topics in Clinical Laboratory Sciences

Semester course; 1-4 credits. This course provides for lectures, tutorial studies and/or library assignments in specialized areas not available in formal courses or research training.

### CLLS 694 Molecular Diagnostic Practicum I

Semester course; 640 clock hours. 8 credits. Prerequisite: CLLS 602. Restricted to advanced M.S. degree students or permission of instructor. Provides direct observation and practice in a molecular diagnostics laboratory with emphasis on nucleic acid extraction and molecular amplification techniques. Develops proficiency at performing, analyzing and reporting test results. Graded as pass/fail.

### CLLS 695 Molecular Diagnostic Practicum II

Semester course; 320 clock hours. 4 credits. Prerequisites: CLLS 602 and CLLS 694. Restricted to advanced M.S. degree students or permission of instructor. Provides direct observation and practice in molecular diagnostics laboratory. Focuses on molecular hybridization and human identity analyses. Develops proficiency at all stages of nucleic acid analyses including performing, analyzing and reporting test results. Introduces practice issues involved in management of a molecular diagnostics laboratory. Graded as pass/fail.

### CLLS 696 Advanced Blood Bank Practicum

6 laboratory hours. 2 credits. Prerequisite: CLLS 601. A laboratory course with practical experiences in resolving complex blood group serological problems and discussion of these problems. Donor phlebotomy, processing of donor units, component preparation and instruction of undergraduate clinical laboratory sciences students also are performed.

### CLLS 790 Research in Clinical Laboratory Sciences

Semester course; 1-15 credits. Research leading to the M.S. degree.

## Department of Gerontology

Ansello, Edward F., Professor and Director, Virginia Center on Aging  
Ph.D. University of Missouri  
Gerontology career preparation, aging and disabilities, geropharmacy, humanities and aging, media and aging, criminal victimization.

Coogle, Constance L., Assistant Research Professor and Assistant Director of Research, Virginia Center on Aging  
Ph.D. Virginia Commonwealth University  
Alzheimer's Disease, developmental disabilities and aging, elder care.

Cotter, J. James, Assistant Professor (Internal Medicine)\*  
Ph.D. Medical College of Virginia of Virginia Commonwealth University  
Policy issues for the elderly, innovation, quality of

long-term care, and services for persons with Alzheimer's Disease.

Egelhoff, William F., Associate Professor Emeritus  
M.B.A. Harvard Business School  
Business administration, theology of aging, political issues in aging.

Harkins, Stephen W., Professor  
Ph.D. University of North Carolina  
Pain and age, memory changes with age, evoked potentials.

Mulligan, Thomas, Professor (Internal Medicine)\*  
M.D. New York University  
Male sexual dysfunction and aging.

Osgood, Nancy J., Professor  
Ph.D. Syracuse University  
Leisure and aging, retirement, alcoholism, suicide.

Parham, Iris A., Professor and Department Chair  
Ph.D. University of Southern California  
Cognitive changes with age, depression, curriculum development.

Pyles, Michael A., Assistant Professor (Pharmacy)\*  
Ph.D. Virginia Commonwealth University  
Health services research, health policy, aging.

Retchin, Sheldon M., Professor (Internal Medicine)\*  
M.D. University of North Carolina  
Elderly drivers; health policy issues for elderly 85+.

Watson, Kathleen, Instructor and Project Director,  
Virginia Geriatric Education Center  
M.S. Virginia Commonwealth University  
Mental health, partial hospitalization programs.

Welleford, E. Ayn, Assistant Research Professor  
Ph.D. Virginia Commonwealth University  
Life-span development, mother-daughter relationships, family systems, successful aging, qualitative inquiry.

\* Department in parenthesis indicates primary appointment.

## History

The Department of Gerontology was founded in 1976. The Master of Science in Gerontology, as well as a postgraduate Certificate in Aging Studies, is offered. The Department of Gerontology became a part of the School of Allied Health Professions in January 1985. As part of the department, the Geriatric Education Center was established Oct. 1, 1985. This center is a multidisciplinary effort involving cooperation of all the health-related professional schools and the College of Humanities and Sciences; the major focus is to promote education in geriatrics/gerontological health care.

## Philosophy

The basic philosophy of the department is to improve the overall well-being of elderly persons through the development of educational programs that are responsive to

the changing psychological, physical, social and political needs of our elderly population. Research, community service and continuing education in gerontology and geriatrics are integral parts of this educational effort.

## Objectives

The purpose of this program is threefold: (1) to train qualified professionals to work in administrative, planning, service delivery and instructional/staff development positions in programs and services for the elderly at the national, state and local levels, (2) to provide an opportunity for those studying in other disciplines, and whose work will encompass service to the aged, to integrate their own training with a comprehensive knowledge/understanding of the aging process and (3) to stimulate the design and execution of gerontological research across the multiple disciplines.

## Facilities

Offices of the Department of Gerontology are located in the Randolph Minor Annex, 301 College St. Facilities for the Psychophysiological and Pain Research Laboratory and the Virginia Geriatric Education Center are housed in the basement of the Lyons Building, 520 N. 12th St.

## Honors and awards

### A. D. Williams Award

An annual award is made to a student who demonstrates by virtue of high scholastic attainment and professional competence unusual promise and ability in the field of gerontology.

### Gerontology student of the year

Each year the faculty chooses a graduating student who has exhibited outstanding scholastic achievement and demonstrated service in gerontology.

### Distinguished Alumni Award

Each year the departmental faculty chooses an alumna/alumnus who best exemplifies the standards of the profession.

### Iris A. Parham Award and Scholarship

The Iris A. Parham Scholarship was created by alumni in honor of Dr. Iris A. Parham and the Department of Gerontology 25th year anniversary. This award is given to a candidate who has

demonstrated distinguished academic performance, outstanding achievement in and dedication to the field of gerontology, and has overcome obstacles or met significant challenges to pursue a career in aging studies.

## Programs

Eight courses of study are offered:

- a master of science degree with a concentration in one of the following six areas: education track, health care organization and planning track, psychogeriatrics track, public administration track, social services track or a research track
- a master of science degree in physical therapy with a specialty in geriatric physical therapy offered jointly with the Department of Physical Therapy
- a combination of the Certificate in Aging Studies Program and a Master of Social Work degree offered jointly by the School of Social Work and the Department of Gerontology
- a Certificate in Aging Studies Program to meet the needs of persons working with the elderly, but who have no academic training in gerontology
- a certificate in aging studies, with emphasis in long-term care administration enables graduates to take the licensure exam for nursing home administration
- Pharm.D. students interested in working with the elderly or in a geriatric setting may earn a graduate certificate in aging studies while completing the doctor of pharmacy degree requirements
- a combination of the certificate in aging studies and a master of science degree in rehabilitation counseling offered jointly with the Department of Rehabilitation Counseling
- a combination of the certificate in aging studies and the Post-professional Master's Program in Occupational Therapy

## Master of Science in Gerontology Program

The gerontology curriculum is a multidisciplinary program established in 1976 which offers the master of science degree. The program utilizes professional assistance from departments on both campuses.

There are six concentration areas in gerontology:

## Education track

This area of concentration is designed for students interested in teaching/training careers in gerontology. Students electing this track will be prepared to provide instruction to university or community college students, the lay public, professional service providers and older people.

## Health care organization and planning track

(In conjunction with the Department of Health Administration.) Upon completing this track, students will have a foundation of knowledge in health care organization, health planning, health policy, and a macro perspective of the financing of health care. In addition, students will have developed skills in policy analysis and the use of economic tools. Finally, students will broaden their understanding of the political, legal and ethical issues involved in health care organization and planning.

## Psychogeriatrics track

This area of concentration, developed jointly with the Department of Psychology, is designed for students interested in working with those older adults and their families who are experiencing psychological difficulty. Students electing this track will be prepared to provide assistance directly to the elderly and their families as well as to consult and train professionals and paraprofessionals to provide more effective mental health services. Training is provided through a combination of specialized didactic instruction and structured field experience in providing direct services, consultation and education.

## Public administration track

Students who elect to pursue courses in the public administration track, developed jointly with the Department of Political Science and Public Administration, will, after completion of course work, be able to plan, organize, report, control and budget for public programs in aging. Grant writing and program evaluation skills will be developed as well. Students choosing the public administration track may wish to complete the Certificate in Public Management Program (CPM).

## Social services track

This track concentrates on developing specialized knowledge and skills in the provision of services to the elderly, basic understanding and skills in at least one

method of social work practice, commitment and ability to participate in the development of strategies and policies relevant to amelioration of social problems of the elderly, ability to integrate and use in practice knowledge of individual behavior and social structure with particular reference to the needs of the elderly.

### Research track

This track is designed for students who would ultimately like to pursue a doctor of philosophy in the social/behavioral sciences or a doctor of philosophy in health-related sciences (School of Allied Health Professions). (All students who elect the research track must complete a thesis.) Students will obtain a strong background in experimental psychology research design and methodology and a broad background in life-span developmental theory.

The 42-hour degree program includes 24 hours of courses in gerontology, 12 hours in the chosen concentration area and six credits for thesis (or a thesis option).

### Admission policy

The program is open to qualified students who have earned a baccalaureate degree from an accredited college or university or the equivalent, maintained a minimum GPA of 3.0 and have satisfactory scores on the GRE or MAT. A successful work experience may strengthen the admission credentials of applicants with marginal records.

Because of the diversity of undergraduate majors, candidates for the gerontology program must present evidence of successful completion of undergraduate courses in the following areas:

- biological science – minimum of six semester hours.
- psychology – minimum of three semester hours.
- sociology/anthropology, social work – minimum of three semester hours.
- statistics, research methods or equivalent – minimum of three semester hours.

(Topics covered in this undergraduate course should be equivalent to those outlined for STAT 214 in the Undergraduate Bulletin.)

Candidates for admission who do not meet these requirements will be expected to complete the required undergraduate course work or to pass challenging examinations by the end of the first year. See the Graduate Studies at VCU chapter of this

bulletin for admission requirements and procedures.

### Transfer and waiver of course credits

Students who have completed graduate work in other graduate departments, whether at VCU or another university, may transfer no more than 12 credit hours work at "B" level if such work is considered relevant by the departmental admissions committee. Also, a maximum of six hours of graduate credits accrued at a "B" level as a "special student" at VCU may be applied to the master of science degree or three hours to the certificate program, with approval of the departmental Admissions Committee.

Transfer credits for graduate work at other institutions will be evaluated at the time of full admission to the program. To have credits transferred, students are required to prepare a synopsis of each graduate course that is to be transferred for review by the faculty. Each synopsis will include the name of texts used in the course and a specific listing of topics and material covered. Students may also apply for waivers of specific requirements in a similar manner.

### Master's thesis

- The master's thesis is an option for students entering with a bachelor's degree. Students may elect either a six-credit thesis or six hours of graduate course work to meet the 42-hour requirement.
- Each student shall arrange for a member of the gerontology program to serve as the chair of the thesis committee. With the chair's approval, at least two additional committee members will be selected. At least two of the members must be from the Department of Gerontology.

The thesis chair will monitor and advise during thesis development. The student will take the major role in actual data collection. The thesis should be a publishable piece of research that makes some contribution to the field of gerontology.

### Written comprehensive examination

A written comprehensive examination is required after completion of all required course work and before the student begins a practicum (field experience).

The comprehensive examination will be scheduled three times a year (early in the fall and spring semesters and once in the summer).

### Practicum (field experience)

Field experiences, with the supervision arranged by the director and program faculty, constitute an additional requirement. These experiences are intended to develop practical understanding, skills, attitudes and values essential for working with the aged in a variety of settings.

The practicum will involve a 600-hour placement (one semester full time or two semesters half time). Each student must submit a practicum proposal (prepared with the assistance of the adviser) that must be approved prior to beginning the practicum.

For those already employed in the field of gerontology, an approved special project may be substituted for the field experience placement. Those students who are working full time in a job outside the field of aging also may submit a proposal for review that may allow for their continued employment, yet fulfilling this important requirement. All students must register for GRTY 607 Field Study in Gerontology.

### Certificates in Aging Studies

The Certificate in Aging Studies Program is designed to meet the needs of those individuals who desire graduate training in gerontology but who do not desire the full completion of the master's program. This program is complementary to the master of science program. There is a post-baccalaureate, a post-master's certificate program, as well as jointly presented specialty certificates: Aging Studies Program (emphasis in long-term care administration); M.S. in Occupational Therapy and Certificate in Aging Studies; M.S.W. and Certificate in Aging Studies; Certificate in Aging Studies with the Department of Rehabilitation Counseling; Certificate in Aging Studies with the School of Pharmacy. Courses for the certificate are also available in video format. Contact the Department of Gerontology directly for information on the telecourses at (804) 828-1565.

### Admission Requirements

The Certificate in Aging Studies Program is open to qualified students who have earned a baccalaureate degree or a master's or terminal degree from an accredited college or university or the equivalent.

## Curriculum

### General Certificate in Aging Studies Program

The certificate program of studies requires successful completion of 21 credit hours of work comprised of the following courses now offered in the gerontology graduate curriculum:

- The biology of aging, psychology of aging, social gerontology, and research methods form the basic core of the certificate program.
- Following the completion of these gerontology courses, students may choose two elective gerontology courses after consultation with their faculty advisers. Advisers counsel students as to the courses that would best suit their educational training needs. Students may choose from aging and human values; topical seminar; independent studies, problems, issues and trends in gerontology; recreation, leisure and aging; and other elective courses.
- In addition to the completion of these prescribed courses, each candidate for a Certificate of Aging Studies would be required to complete satisfactorily a project in gerontology on a subject approved by the faculty. This project may be a comprehensive literature review, a research project, or a training or demonstration project. Students would register for a three credit course in independent studies (GRTY 692).
- For students who already have an M.S. or Ph.D., two three-credit independent study courses are required (GRTY 792).

### Certificate in Aging Studies Program (emphasis in long-term care administration)

Students wishing to complete the Certificate in Aging Studies Program (emphasis in long-term care administration) must complete a total of 22 credit hours. In addition to the three basic core courses of the certificate program (nine credits), students complete a three-credit field study and 10 credits of health administration courses, which focus on long-term care administration, hospital and medical law, and financial management in health organizations. Completion of these requirements enables graduates to take the licensure exam for nursing home administration.

### M.S. in Occupational Therapy and Certificate in Aging Studies

The Department of Gerontology in cooperation with the Department of Occupational Therapy provides an opportunity for students in the Post-professional Master's program to complete the certificate. Students complete 15 credits in gerontology and three credits in occupational therapy (OCCT 655).

### M.S.W. and Certificate in Aging Studies

The School of Social Work in cooperation with VCU's Department of Gerontology provides students with a unique opportunity in social work and gerontology. School of Social Work's master of social work students interested in work with the elderly or in gerontological programs may earn a certificate in aging studies while completing master of social work degree requirements.

Interested students must meet the admission requirements of the Master of Social Work Program of the School of Social Work and of the Certificate in Aging Studies Program of the Department of Gerontology. Admission into one program does not guarantee admission into the other. In order to meet the requirements of the master of social work degree and the Certificate in Aging Studies Program, students complete a total of 65 graduate credits. All foundation and specialization courses of the Master of Social Work Program are completed, and core courses (nine credits) of the Certificate of Aging Studies Program are completed. Other requirements are met by (1) completion of M.S.W. research credits in which students undertake a project focused on aging, (2) completion of second-year field instruction practicum requirements (six credits) in a social work setting related to aging, and (3) completion of an independent study course in gerontology which integrates research and practicum courses.

Additional information may be obtained from the Department of Gerontology, P.O. Box 980228, Richmond, VA 23298-0228 (Attention: M.S.W.-Gerontology Certificate Adviser).

### Certificate in Aging Studies with the Department of Rehabilitation Counseling

The Department of Gerontology in cooperation with the Department of Rehabilitation

Counseling provides an opportunity for students in the master's degree program in rehabilitation counseling to complete the certificate. This program requires the completion of 14 credits in gerontology and three credits of RHAB 696 in an approved aging setting.

### Certificate in Aging Studies with the School of Pharmacy

The Department of Gerontology in cooperation with the School of Pharmacy provides an opportunity for students in the Doctor of Pharmacy program to complete the certificate. This 17-credit program is designed to integrate the required independent study project in gerontology into the Pharm.D. curriculum's clerkship assignment.

### Awarding of the certificate

Upon successful completion of the total program described here, as well as maintaining a 3.0 GPA, students are awarded a Certificate in Aging Studies.

### Relationship to the M.S. in Gerontology Program

The Certificate in Aging Studies Program is designed to meet the needs of those individuals who desire graduate training in gerontology, but who do not desire the full completion of the master's program. This program is complementary to the master of science program. Certificate students who wish to enter the master of science program must make formal application and abide by the admission requirements outlined in this bulletin.

### Graduate courses in gerontology (GRTY)

**All students must successfully complete the following 24 hours of core courses:**

#### GRTY 601 Biological and Physiological Aging

3 credits. Biological theories of aging; cellular, physical, systemic and sensory change; health maintenance.

#### GRTY 602/PSYC 602 Psychology of Aging

Semester course; 3 seminar hours. 3 credits. Prerequisite: Permission of instructor. Students must complete social sciences research methods before taking this course. Psychological adjustment in late life; special emphasis on personality, cognitive and emotional development; life crises associated with the aging process.

#### GRTY 603 Social Science Research Methods Applied to Gerontology

3 credits. Prerequisite: Graduate statistics. Application of social science methods and techniques to study of the

aged; data sources; types of problems encountered; data analysis; research reporting; use of research findings.

**GRTY 604 Problems, Issues and Trends in Gerontology**

3 credits. Application of knowledge in analysis of problems confronting aged persons; social issues and legislation; service delivery programs; current trends in gerontology.

**GRTY 605 Social Gerontology**

3 credits. Focuses on the sociopsychological and sociological aspects of aging. Various sociopsychological and social theories of aging will be discussed. The course will provide a broad overview of several general topics such as the demography of aging, politics and economics of aging, and cross-cultural aspects of aging. The course will offer an in-depth analysis of particular role changes that accompany aging (i.e., retirement, widowhood, institutionalization).

**GRTY 606 Aging and Human Values**

3 credits. Identification and analysis of value systems of the aged, exploration of religious beliefs; death and dying; moral, ethical and legal rights; human values and dignity.

**GRTY 607 Field Study in Gerontology**

3 credits. Systematic exploration and study in the field of an actual problem, issue or task germane to the student's gerontology concentration. Application of specific concepts and approaches to assessment analysis. Arranged in consultation with the student's program adviser.

**GRTY 608 Advanced Topics in Problems, Issues and Trends in Gerontology**

Semester course; 3 lecture hours. 3 credits. Explores key issues and trends resulting from the aging of the society. Focuses on the development of responsive programs and services for older persons, and examines issues related to incipient and proposed changes to society's response to the health, income, health care financing and long-term and family support needs of aging persons.

**Elective courses**

**GRTY 410 Introduction to Gerontology**

3 credits. A survey of the field of aging with attention to physical, psychological, social, economic and cultural ramifications of age.

**GRTY 501 Physiological Aging**

3 credits. This course is taught at an introductory level in contrast to the more substantive background required for GRTY 601. Distinguishes between normal aging and those chronic illnesses often associated with aging in humans. This course would be valuable to those interested in the general processes of human aging.

**GRTY 612 Recreation, Leisure and Aging**

3 credits. An analysis of the quality and quantity of leisure in maximizing the quality of life for the older person. Focus will be on concepts of leisure; the interrelationship of leisure service delivery systems and other supportive services; the meaning of leisure to the elderly in the community and within institutional settings; and innovative programming.

**GRTY 615/PSYC 615 Aging and Mental Disorders**

Semester course; 3 lecture hours. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status and intervention strategies that have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises; psychology of health, illness and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group and family therapy; behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

**GRTY 616 Geriatric Rehabilitation**

Semester course; 3 lecture hours. 3 credits. Provides an overview of the process in geriatric rehabilitation with an assessment, psychosocial aspects and rural issues in rehabilitation. Considers major disabling conditions in late life, and emphasizes the nature of the interdisciplinary rehabilitation process with aging clients.

**GRTY 624/SOCY 624 Community and Community Services for the Elderly**

3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological and social dimensions of community and on communities of the aged.

**GRTY 625 Aging and the Minority Community**

3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological and psychological aspects of minority aging. Attention also will focus on dominant social problems and federal policies toward the aged.

**GRTY 627 Psychology of Health and Health Care for the Elderly**

Focuses on factors in the etiology, course and treatment of illness; patient/practitioner relationship; patient compliance and psychosocial issues in terminal care.

**GRTY 638 Long-term Care Administration**

3 credits. Focuses on unique knowledge and skills considered essential to effective long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human and conceptual problems unique to LTC are addressed through cases and field exercises.

**GRTY 641/PSYC 641 Survey of Psychological Assessment and Treatment of the Older Adult**

3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstration and classroom practice of actual treatment techniques.

**GRTY 642/PSYC 642 Practicum in Clinical Geropsychology**

3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing

homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in deinstitutionalization; possible extended placement in a particular facility.

**GRTY 691 Topical Seminar**

3 credits. Seminars on specialized areas of gerontological interest. Examples of special topic courses taught in previous years: nutrition and aging; psychophysiology and neurobiology of aging; wellness and aging; and preretirement planning.

**GRTY 692 Independent Studies**

1-3 credits. Directed in-depth independent study of a particular problem or topic in gerontology about which an interest or talent has been demonstrated.

**GRTY 792 Independent Studies for Master's/Ph.D. Level Students**

Semester course; 3 credits. Independent study in selected area under supervision of gerontology faculty. Focuses on in-depth research and analysis of a major focus area of gerontology, leading to a comprehensive, publishable quality review paper. Emphasizes intergrating previous graduate training into aging topical area.

**GRTY 798-799 Thesis**

3-6 credits. A research study of a topic or problem approved by the thesis committee and completed in accordance with the acceptable standards for thesis writing.

**Department of Health Administration**

Barker, Thomas C., Professor Emeritus

Ph.D. State University of Iowa  
Health administration.

Bazzoli, Gloria J., Professor

Ph.D. Cornell University  
Health economics.

Clement, Dolores G., Professor

Dr.P.H. University of California  
Health policy and administration.

Clement, Jan P., Professor

Ph.D. University of North Carolina  
Health policy and administration, business finance.

Hurley, Robert E., Associate Professor

Ph.D. University of North Carolina  
Health policy and administration.

Luke, Roice D., Professor

Ph.D. University of Michigan  
Medical care organization, health economics, quality assurance.

McCue, Michael J., Professor

D.B.A. University of Kentucky  
Health care finance.

Mick, Stephen S., Arthur Graham Glasgow Professor and Chair

Ph.D. Yale University  
Health services systems, medical sociology.

Ozcan, Yasar A., Professor

Ph.D. Virginia Commonwealth University  
M.B.A. Southeastern Louisiana University  
Statistics, quantitative methods, information systems.

Shukla, Ramesh K., Professor  
Ph.D. University of Wisconsin  
Systems analysis/management, manpower planning, health provider productivity.  
Swisher, Karen W., Associate Professor  
J.D. University of Richmond  
Health law.

White, Kenneth R., Associate Professor  
Ph.D. Virginia Commonwealth University  
M.P.H. University of Oklahoma  
M.S. Virginia Commonwealth University  
Health administration, health professions, leadership.

## Introduction

Education in health administration at the university began in 1949 with the establishment of a graduate curriculum in hospital administration. Early graduates received a certificate; the master's degree was awarded beginning in 1955.

These early efforts grew and developed into the Department of Health Administration which was established in 1972. The department now includes three major programs: (1) Master of Health Administration, (2) Doctor of Philosophy in Health Services Organization and Research, and (3) Master of Science in Health Administration, Professional M.S.H.A. Program-Online. The department also cooperates with the T. C. Williams School of Law of the University of Richmond in offering a dual degree program in health administration and law. In 2001, the dual degree M.D./M.H.A. program was established with the VCU School of Medicine. Both master's programs are fully accredited by the Accrediting Commission for Education in Health Services Administration (ACEHSA). In addition to these educational programs, the Department of Health Administration has a major research program and is involved in a wide range of public service activities, including continuing studies for health services administrators and other health professionals.

## Departmental purpose and functions

The overall purpose of the Department of Health Administration is to provide educational programs and services related to the organization and administration of health services. In achieving that purpose, the department's principal functions are to provide high-quality education leading to careers in the administration of health care institutions, agencies, and systems and to provide advanced training and education for persons who will teach, plan, evaluate

and investigate health care policies and medical care systems. Corollary functions are to provide assistance and other services for community organizations and to conduct health services and health policy research.

## Facilities

The department is located in the William Grant House, formerly the Sheltering Arms Hospital, at 1008 E. Clay St., Richmond, VA. The chair's office and the professional graduate programs offices are located on the second floor. The doctor of philosophy program office and the Williamson Institute are located on the third floor of the building.

The Medical College of Virginia Hospitals, one of the largest teaching hospitals in the nation, and other clinical facilities of the MCV Campus are readily accessible to the department's students and faculty. In addition, the department has clinical affiliations and close working relationships with a large number of health care organizations and agencies in Virginia and throughout the United States. The organizations and agencies are used extensively as clinical facilities in the department's educational programs.

## Endowed awards, lectureships and professorships

### Robert Hudgens Memorial Award

The Robert Hudgens Memorial Award was established and endowed by the department's alumni association in cooperation with the American College of Healthcare Executives (ACHE). The Hudgens Award is presented annually to the person selected by a special ACHE committee as the most outstanding young health care executive in the United States. It is a major, nationally recognized award presented at the annual ACHE Congress on Administration.

### Arthur Graham Glasgow Professorship of Hospital Administration

The endowed Arthur Graham Glasgow Professorship of Hospital Administration was established in 1957 in honor of Glasgow, who had demonstrated a vital interest in hospitals and hospital administration.

### Herman L. Mullins Award

The Herman L. Mullins Award is presented annually for the most outstanding management study completed by a graduate

student in health services administration. This award was established by the master of health administration class of 1976 through the Health Administration Alumni Association as a lasting recognition for the contributions of Herman L. "Moon" Mullins as a teacher, adviser and friend of the student.

### Thomas C. Barker Preceptor Award

The Thomas C. Barker Preceptor Award was established by the master of health administration class of 1996 in honor of the first dean of the School of Allied Health Professions, who was affiliated with the Department of Health Administration. Barker had served as chair of the Department of Health Administration and Master of Health Administration Program director prior to becoming dean. The graduating class nominates and elects the preceptor who has demonstrated outstanding mentorship during the year of residency. Dedication to the Master of Health Administration Program should be a consideration in the nomination.

### Stuart D. Ogren Scholarship Fund

The Stuart D. Ogren Scholarship Fund was established by institutional members of the Virginia Hospital and Health Care Association, and Ogren's friends and colleagues in 1990. The fund honors Ogren, a former president of the Virginia Hospital Association. During his distinguished career, Ogren made significant contributions to the effective provision of medical care services in the commonwealth and the formulation of health care policy in the commonwealth and the nation. These scholarships, supported through an endowment, are available to students who have been admitted to the department's graduate program in health services administration (M.H.A. degree) program. Funds are employed to attract exceptionally well-qualified students (as defined by previous academic performance and work experience). The awardees are recognized each year at the Virginia Hospital and Health Care Association's annual meeting.

### HCA Scholarship for Emerging Healthcare Leaders

HCA Healthcare established the HCA Scholarship for Emerging Healthcare Leaders in order to formalize a partnership with the Department of Health Administration in recruiting the most qualified students. These scholarships, supported through an endowment, are available to students

who have been admitted to the M.H.A. Program. Funds are employed to attract exceptionally well-qualified students (as defined by previous academic performance, work experience and leadership roles).

### **Jerry L. Norville Award**

The Jerry L. Norville Award is presented annually to the faculty member who, through example, demonstrates exceptional dedication and genuine concern for the welfare of students in the Master of Health Administration Program. This award was established by the master of health administration class of 1989 in honor of Professor Jerry L. Norville who served on the faculty for 20 years and, during that time, served as director of the Master of Health Administration Program and as chair.

### **David G. Williamson Jr. Institute for Health Studies**

Officially initiated in 1987, the David G. Williamson Jr. Institute for Health Studies was named in memory of Mr. David G. Williamson Jr., formerly the vice-chair of the Hospital Corporation of America and one of the department's leading alumni. Williamson played a major role in making it possible for the institute to be established. The institute serves as a bridge between the department and administrative and clinical leaders in health care by sponsoring instructional, research, and outreach programs focused on the organization and financing of health services. Such programs are designed to help resolve the often conflicting requirement that health care organizations be simultaneously cost effective, innovative and responsible for serving society's needs.

### **Dolores G. Clement Award for Outstanding Advising**

Dolores G. Clement Award for Outstanding Advising was established by the master of health administration class of 1998 in honor of Dolores G. Clement, Dr.P.H. The award recognizes a faculty member for counsel and support outside of the classroom. More specifically, the award is in recognition of faculty who have demonstrated extraordinary dedication to the academic, professional and personal growth of students. This award has been established to honor Clement for her years of devotion to the Department of Health Administration.

### **Paul A. Gross Distinguished Leadership Speaker Series**

The Paul A. Gross Distinguished Leadership Speaker Series is a program to bring to Virginia Commonwealth University the nation's leading scholars and health care executives to discuss topics on the cutting edge of research, scholarship and management expertise in the U.S. health care system. Its overarching goal is to increase the awareness of Virginia Commonwealth University students, faculty and alumni about current issues in the administrative world of the health care system.

### **Carl Fischer Fund**

The friends and associates of Carl Fischer, former Chief Executive Officer of the Medical College of Virginia Hospitals, established this endowment to honor the excellent leadership Mr. Fischer provided to the hospital. This fund will support students with an interest in health care administration.

### **Department of Health Administration Award in Managerial Ethics**

Established through a gift from anonymous donors, this award is conferred annually to a professional student in the Department of Health Administration to recognize his or her inquiry into the ethical challenges facing those who manage health care organizations. The intent of this award is to foster the development of a sense of duty to humanity in health care managers, as exhibited by the morality needed in the administration of the health care enterprise in working with and for people.

### **Department of Health Administration Alumni Scholarship Fund**

Through the generous donations of departmental alumni and alumnae, this fund is available for scholarship support to attract and maintain professional students who exemplify the highest standards of academic performance and leadership capability.

### **Ham Flannagan Scholarship Fund**

This fund was founded through the generosity of the friends of Paul F. "Ham" Flannagan, M.H.A. 1954, a long-time supporter of the Department of Health Administration and mentor to literally dozens of departmental graduates. The fund's objective is to support students making a firm commitment to excellence in health care administration.

### **Fleetwood Scholarship Fund**

The Fleetwood Scholarship Fund is a memorial to James M. Fleetwood Jr., an honorary alumnus, preceptor and long time friend of the Department of Health Administration. The fund's purpose is to honor his memory with scholarships to support M.H.A. students needing financial aid in the department.

### **Hyneman-Mick Endowment Fund**

This endowment was established to promote excellence in scholarship by a doctoral student or students enrolled in the Ph.D. Program in Health Services Organization and Research in the Department of Health Administration. The goal is to create opportunities for doctoral students to advance their education and research capabilities.

### **James W. Begun Award for Excellence in Doctoral Studies**

To commemorate the 50th anniversary of the founding of the Department of Health Administration in 1999, the doctoral alumni/ae established the James W. Begun Award for Excellence in Doctoral Studies. Once the final doctoral dissertation has been defended, faculty may nominate doctoral students for this award. Selection criteria include: dissertation quality, advancement of organizational theory and health service research, and the applicability of the research findings.

### **Graduate program in Health Services Administration**

The graduate program in health services administration is designed to prepare persons for administrative roles leading ultimately to top-level executive positions in complex health services organizations. The curriculum combines emphasis in strategic and operational management, thus orienting students toward the broad spectrum of managerial problems and functions likely to be encountered by health services organizations.

The program's educational objectives and content are based upon the premise that a large number of students who select this curriculum aspire to become senior executives of health care organizations at some point in their careers. A comprehensive listing of these goals is set forth in a separate document, "Educational Objectives of the Graduate Program in Health Services Administration."

The graduate program in health services administration is designed primarily for

full-time students. A limited number of part-time students may be accepted into the program. The admissions standards and degree requirements for part-time degree candidates are the same as those for full-time degree candidates.

The graduate program was accredited initially in 1968, one of the first programs in the United States to achieve that status. It has maintained continuously its national accreditation status, and in 1993 the program was awarded an eight-year accreditation.

### **Dual degree program in medicine and health administration**

Advanced study in health administration and medicine is available through a dual degree program cosponsored by the department and the VCU School of Medicine. The program leads to the awarding of the doctor of medicine and master of health administration degrees. The objective of the M.D./M.H.A. program is to provide highly motivated medical students the expertise for management and leadership competency in complex health care organizations. The program may be completed in five years. Applicants for this program are required to meet the admission requirements of each program. For information regarding the dual degree program, contact the director of the program.

### **Dual degree program in health administration and law**

Advanced study in health administration and law is available through a dual degree program co-sponsored by the department and the T. C. Williams School of Law at the University of Richmond. The program leads to the awarding of the master of health administration and juris doctor degrees. Participants are provided the necessary expertise either to represent clients within the health care industry or to function as legal policy makers or administrators who fully appreciate the legal environment of the health care field. Applicants for this program are required to meet the admission requirements of each program. For information regarding the dual degree program, contact the director of the program.

### **Admission requirements – M.H.A. and dual degree programs**

Applications are encouraged from persons who have earned undergraduate or

graduate degrees in any discipline or field of study. However, to be eligible for admission to the graduate program, completed course work must include basic preparation in economics, financial accounting and business statistics. In addition, a working knowledge of college-level algebra is necessary preparation for the graduate program's courses.

The foundation requirements may be met by the following specifications:

- completing specified prerequisite courses with a grade of "C" or better within the past five years at any accredited college or university,
- completing specified foundation courses within the School of Business at VCU, or
- providing other evidence of competency acceptable to the admissions committee.

Any or all of these three foundation courses may be taken in VCU's School of Business during the summer session immediately before the fall semester when the student enrolls in the graduate program in health administration. The foundation courses provide an excellent opportunity for students without a strong background in business to fulfill the course work requirements for entrance into the graduate program. In addition, students who have met all or some of the prerequisite requirements may strengthen their preparation for the graduate program by taking other foundation courses in the business school's summer session. These include courses in marketing, business law, finance and other areas. The foundation courses cannot be applied toward the 60 semester hours required for the master of health administration degree. Foundation courses at the graduate level are available only to those who already have been admitted to a graduate program offered by the department.

To be considered for admission into the graduate program in full status, the applicant must meet the following minimum qualifications: (1) present evidence of personal achievement, scholarship, intellectual ability and professional promise, (2) hold a baccalaureate or graduate degree from a college or university that is fully accredited by the Association of American Universities or by a regional accrediting agency, (3) have an overall GPA of 2.75 or higher on a 4.0 scale in undergraduate work or provide evidence of high achievement in a substantial amount of graduate-level course work, (4) attain a satisfactory score (at least 50th percentile in each category) on the Graduate Record Examination or the Graduate

Management Aptitude Test, and (5) other factors such as personal interview and prior work experience. Enrollment in the program is limited and competition is strong. Meeting the minimum qualification above is not generally sufficient for admission.

Applicants who have completed the prerequisite course work and meet the other requirements may be admitted into the graduate program in full status. Students in full status are candidates for the master of health administration degree. Full status is maintained as long as the student achieves a GPA of 3.0 in all course work each semester.

If an applicant presents qualifications that approximate the admissions requirements and standards, that applicant may (at the discretion of the Admissions Committee) be admitted into the graduate program on provisional status. Advancement to full status may be approved by the faculty when the student has satisfactorily completed one or more semesters of graduate studies. Students admitted on provisional status who do not meet GRE/GPA standards will be reviewed by the faculty for dismissal from the program or continuation on probationary status at the end of their first semester of graduate studies if they have not earned at least a 3.0 GPA for all courses attempted or if they have earned a grade of less than "C" in any course. Complete information regarding academic requirements and standards is set forth in Academic Policies and Regulations for the Graduate Programs in Health Administration (M.H.A. and M.S.H.A.).

VCU is a state-aided institution, and preference is given to applicants with equal qualifications who are Virginia residents. Persons from countries other than the United States may apply for admission to the department's graduate program. Foreign applicants must meet all the regular admission requirements, score a minimum of 600 on the Test of English as a Foreign Language, submit evidence of a preapproved residency site in the home country and submit evidence of financial responsibility as stated in the Graduate Studies at VCU chapter of this bulletin.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

Requests for further information regarding admission requirements, standards and procedures may be directed to the Department of Health Administration, School of Allied Health Professions, Virginia Commonwealth University, P.O. Box 980203, Richmond, VA 23298-0203.



## Transfer credit

Applicants who have earned graduate credit elsewhere or at VCU that has not been previously applied to another earned degree may, at the discretion of the faculty, be permitted to transfer a maximum of one third the didactic semester hours to apply toward the degree credit requirements. Transfer credit may be allowed when, in the judgment of the faculty, the applicant has satisfactorily completed graduate coursework elsewhere that is equivalent to courses in the graduate curriculum.

Petitions to transfer credit are to be prepared by the applicant and submitted to the program director prior to entering the program. It is the applicant's responsibility to establish: (1) that the institution has at least regional accreditation, (2) that the course was completed with a grade of "B" or better within the last five years and was not previously applied to an earned degree, and (3) that the course is equivalent to a required or elective course appropriate to the M.H.A. curriculum. (A course syllabus or detailed letter from the instructor, which describes the purpose, objectives, content and course readings will ordinarily be required.) The program director ensures that the petition is sufficiently documented and refers it to the primary instructor of the related course or courses. The primary course instructor reviews and notes a recommendation on the petition and forwards it to the program director for final approval and communication to the School of Graduate Studies.

## Admission for VCU Honors students

VCU Honors Students are eligible to apply for admission to the M.H.A. Program during their junior or senior years of undergraduate study. The application process is the same as for other applicants with the following exceptions: (1) requirements for the GRE or GMAT are waived; (2) application fee is waived; and (3) official transcript is not needed (as grades can be accessed in the VCU system). The admissions decision will be made by the M.H.A. Admissions Committee, at which time a place will be reserved for the student, provided the students graduates with honors and completes the prerequisite course work.

## Curriculum

Students are required to complete a total of 60 semester hours (including transfer credit, if any) to qualify for the master of health administration degree. This require-

ment includes 46 hours of core course work plus at least six semester hours of elective studies in health administration and related disciplines, such as business administration, public administration, urban and regional planning, and gerontology. In addition, eight semester hours of practicum course work are required as a part of the administrative residency. The graduate program is designed to provide a balanced combination of academic studies and field experience to enable students to achieve the program's educational goals and become well prepared to enter the field of health administration.

The core curriculum of the graduate program in health administration consists of 16 courses totaling 46 semester hours which must be completed by all degree candidates. These courses represent an integrated series of learning experiences designed to provide students with a common body of knowledge and skills which are considered to be essential.

### Core courses

HADM 602 Health System Organization, Financing and Performance	3
HADM 606 Health Care Managerial Accounting	3
HADM 607 Financial Management in Health Organizations	3
HADM 608 Seminar in Health Care Finance	3
HADM 609 Health Systems and Epidemiology Evaluation	3
HADM 610 Health Care Management Decision Support Systems	3
HADM 611 Hospital and Medical Law	4
HADM 612 Health Information Systems and Performance	3
HADM 614 Health Care Marketing	3
HADM 624 Health Economics	3
HADM 631 Managed Care	3
HADM 646 Organization Behavior and Design in Health Care	3
HADM 647 Operations Management in Health Care Organizations	3
HADM 648 Strategic Management in Health Care Organizations	3
HADM 682 Executive Skills I	1
HADM 683 Executive Skills II	1
HADM 691 Special Topics	1
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As part of the core curriculum and elective courses, students in the Master of Health Administration Program complete a one-year series of executive skills seminars. These seminars are designed to focus on individual development of personal skills essential to success in health administration.

Students in the M.H.A./J.D. program are required to complete 44 semester hours

while in the Graduate Program in Health Administration. Students take all the master of health administration curriculum core courses except HADM 611 Hospital and Medical Law and the eight-credit Administrative Residency. M.H.A./J.D. students are waived from HADM 611. It is not necessary to replace this course with another elective course in the M.H.A. program.

Students in the M.D./M.H.A. program are required to complete 47 semester hours while in the graduate program portion. Students take the M.H.A. core courses except HADM 608, 682 and 683. A course in physician practice management is required.

Students in the M.H.A./J.D. and M.H.A./M.D. programs must take one administrative internship of at least three credit hours. This may be completed between the first and second years in the M.H.A. program. Satisfactory completion of the oral comprehensive seminar is required during the semester preceding graduation.

## Administrative residency

### Purpose of the residency

The Administrative Residency is an integral part of VCU's graduate program in health services administration. The basic purpose of the residency is to provide students opportunities to apply and further develop their administrative knowledge and skills through a period of applied experience in an operational setting. The Administrative Residency is supervised directly by experienced executives who serve as the students' preceptors.

Through a carefully selected and organized residency experience, students strengthen the foundation of general knowledge and skills gained through the core curriculum and develop further insight and expertise in their selected concentrations. Students serve their residency in the type of health care organization in which they wish to gain specialized knowledge, skills and experience. Overall policies and guidance for the administrative residency are established by the Department of Health Administration and are included in Handbook for the Administrative Residency of the Graduate Program in Health Administration.

### Appointment to the residency

Students become eligible for entrance into the administrative residency after completing 52 semester hours of specified course work and achieving an overall GPA of 3.0. Students on academic probation or with any incomplete grades during their

final on-campus semester prior to their residency may, at the discretion of the faculty, be prevented from entering their residency although their overall GPA is 3.0 or higher.

In addition to meeting the above academic requirements, the student must, in the judgment of the faculty, present evidence of readiness for a clinical experience by demonstrating sufficient academic proficiency in the core areas of the curriculum and by demonstrating professional maturity.

The director of the M.H.A. program or his/her designee has the responsibility to coordinate residency placements. In making these assignments, the director will consider the preferences of the students, the preferences of the preceptors and the recommendations of faculty advisers. Students' preferences may not always be met. Administrative residents are paid a salary by the organization in which they are being sponsored.

### On-campus commitments during the residency

During the residency phase of the graduate program, students must attend scheduled on-campus seminars and must participate in a series of electronic seminars on topics related to the residency experience. Equipment requirements are the same as those listed for the M.S.H.A. program. During the on-campus seminar, students will participate actively in other educational activities associated with course work HADM 693, 694 and 695 taken during the residency year.

### Residency policies and procedures

A complete statement of academic policies and procedures relating to the administrative residency phase of the graduate program is set forth in Administrative Residency Policies and Procedures, in the Handbook for the Administrative Residency of the Graduate Program in Health Administration.

### Length of the program

Students ordinarily will begin their studies during the fall semester and complete their course work requirements within 21 months. For most students, this portion of the graduate program will be followed by an administrative residency of 12 months.

### Requirements for graduation

To qualify for the master of health administration degree, students must meet

the following requirements: (1) achieve an overall GPA of 3.0 on a 4.0 scale for all graduate curriculum course work, (2) satisfactorily complete all requirements of the administrative residency including required course work taken during the period, (3) present a comprehensive seminar administered near the end of the graduate program, and (4) in the judgment of the faculty, demonstrate sufficient maturity, development and abilities in health services administration to constitute readiness to enter the profession of health administration.

Degrees are conferred at commencement exercises of the university in December and May.

### Academic policies and regulations

Academic policies and regulations for the graduate program in health services administration are set forth in separate documents published by the Department of Health Administration. These departmental documents, as well as publications that state university-wide policies and regulations, may be obtained by applicants at the time of their interviews.

### Professional M.S.H.A. Program – Online

The professional program is a 22-month distance learning course of study leading to the award of a master of science in health administration. It can be completed while working full time, because time away from work and home is minimized. The program is designed specifically for self-motivated, mature and experienced professionals who are seeking advanced preparation in management. Part-time options are also available.

The program is designed to meet the distinctive professional development needs of:

- clinicians,
- physicians,
- mid-level managers,
- executive-level managers and
- functional specialists.

### Curriculum

Completing the professional program's curriculum requires 22 months. Each semester is composed both of on-campus and off-campus sessions. During the six one-week on-campus sessions, students attend professional program classes on the MCV Campus. During the off-campus session of each semester, students continue

studies at their home/work site, employing a carefully planned array of distance learning technologies.

A new class begins each July/August. The schedule of courses is as follows:

	credits
HADE 602 Health Systems Organization, Financing and Performance	3
HADE 624 Health Economics	3
HADE 681 Special Topics: Introduction to Health Care Technology	1
HADE 690 Leadership and Health Care Organizations	3
HADE 606 Health Care Managerial Accounting	3
HADE 610 Health Care Management Decision Support Systems	3
HADE 646 Organizational Behavior and Design in Health Care Management	3
HADE 611 Health Care Organization and Management Law	2
HADE 613 Employment and Labor Law for Health Care Organizations	2
HADE 607 Financial Management in Health Organizations	3
HADE 612 Health Information Systems and Performance	3
HADE 615 Managerial Epidemiology	2
HADE 631 Introduction to Managed Care	3
HADE 614 Health Care Marketing	3
HADE 648 Strategic Management in Health Care Organizations	3
HADE 681 Special Topics: Human Resource and Career Planning	1
HADE 681 Special Topics: Advanced Medical Informatics	3

Professional M.S.H.A. Program-Online courses are designed to meet the distinctive needs of the experienced health care professional. Courses develop business skills for the unique health care environment so that students are prepared to meet the challenges of the health care marketplace. Classes draw upon the knowledge of the faculty and the diverse group of experienced professionals enrolled.

### On-campus study

During the 22-month curriculum, associates spend six one-week sessions on the MCV Campus. On-campus sessions are held during July/August, December and May.

During on-campus sessions, students attend lectures, participate in seminars and use the department's computer facilities and the VCU library. Ample opportunity is provided to interact with other associates, faculty and visiting scholars/practitioners. Courses meet during the day. Evenings are reserved for study, group project work, informal interaction with fellow associates, relaxation and planned social events.

All courses are designed carefully to facilitate effective and efficient learning. Associates are provided with detailed outlines of lectures, a complete handout set and comprehensive learning/study guides for the material covered.

While in residence at the university, students stay in conveniently located hotels. Meals can be obtained for reasonable prices in the hotel or at a wide variety of restaurants in the immediate area. Students are encouraged to take advantage of the university's recreational facilities and the cultural/entertainment opportunities of Richmond and the surrounding area.

### Off-campus study

During the off-campus session, students continue course work at their places of residence/employment. They employ the following distance learning technologies in their studies.

### World Wide Web-based courses

The Department of Health Administration was a leader in developing the course software which now is used all over the world. Each course has its own electronic classroom. Faculty members distribute announcements and assignments, and conduct seminars/forums. Students can chat online, take practice quizzes and listen to recorded messages from faculty. The Web site and the Web-based technology are designed with the computer novice in mind. Students are trained in the usage of the software and can receive support from our computer instructor as well as faculty.

### Computer-assisted Instruction (CAI)

CAI makes it possible to offer individual lessons on a disk or CD. By using a personal computer, students are guided through a series of instruction modules and problem sets. They proceed at their own pace and receive constant feedback regarding their level of knowledge and skill acquisition. No previous computer experience is required to use CAI packages.

### Independent-study modules

These modules contain selected readings, problem sets, discussion questions and exercises. Each module is designed to help students attain a specifically defined learning objective.

Students are expected to devote 15 to 20 hours per week to study during the off-campus period of each semester.

### Equipment requirements

All associates admitted to the M.S.H.A. program must have access to a multimedia personal computer. Specific hardware and software requirements are available from the department.

In addition, associates must be able to access the Internet from their personal computer. Access is usually obtained through a local Internet service provider by purchasing an Internet subscription.

Although associates can use a personal computer at the office, we strongly recommend that they have one at home.

### Admission requirements

Application procedures and admission requirements for the M.S.H.A. program are different than other courses of study offered by the university, so interested individuals should contact the department. The material can be obtained by writing Professional M.S.H.A. Program-Online, Virginia Commonwealth University, P.O. Box 980203, Richmond, VA 23298-0203, by calling (804) 828-7799 or from the department Web site at <http://www.had.vcu.edu>. Applications are accepted beginning in September for admission to the program in July of the following year. The early application deadline is March 15 and the regular application deadline is April 15 of each year.

The professional program admits individuals with diverse educational, work and life experiences who have the demonstrated capacity to pursue a rigorous course of professional graduate study.

To be considered for admission to the professional program applicants must, at a minimum:

- possess a baccalaureate degree from an institution of higher learning recognized by VCU and have a 2.75 GPA for all undergraduate work completed,
- have five years of professional health care work experience,
- submit scores on a standardized aptitude test for graduate studies (GRE or GMAT),
- submit a resume and personal statement, and
- forward all required application and supporting materials to the School of Graduate Studies.

### Previous educational experience

Applicants with less than a 2.75 undergraduate GPA who have exceptional professional experience will be considered for

admission on provisional status. Provisional status will be removed after satisfactory completion of the first semester of the program. If an applicant has completed any graduate studies (whether or not a degree was awarded), performance in such course work will be considered in the admission decision.

### Work experience

Applicants are expected to have at least five years of professional health care work experience as documented in a professional resume. The specific experience profile deemed appropriate for admission to the professional program depends upon one's particular profession or occupation. The resume is a very important element of the application materials. Applicants are encouraged to prepare the resume in such a way that it accurately and completely describes their accomplishments.

### Graduate studies aptitude tests

VCU requires that all applicants for graduate study submit standardized aptitude test scores. The professional program will accept scores on either the GMAT or the GRE. Applicants who have taken the GMAT or GRE in the last five years may submit previous scores. Those applicants holding certain master's or professional doctoral degrees (for example, M.D., D.D.S., J.D., Pharm.D.) may have GMAT or GRE requirements waived upon petition to the graduate dean. Applicants should make arrangements to take the examination of their choice at the earliest possible date.

### Prerequisites

No specific previous course work is required for application to the program. Upon formal acceptance, associates will be provided independent-study modules in three areas: microeconomics, accounting and statistics. These modules include books, articles, programmed instruction handbooks and computer-aided instructional material. Completing these independent-study modules precludes the need for taking prerequisite course work prior to instruction. Applicants having acceptable previous course work in accounting, microeconomics and/or statistics will not be required to complete these independent-study modules.

### Academic policies and regulations

Academic policies and regulations are set forth in separate documents published by the Department of Health Administration.

These documents, as well as the university-wide policies and regulations, are available from the department. They are reviewed during orientation sessions.

## **Financial considerations**

Interested students should contact the department for current tuition and fee information. In addition to tuition and fees, students will need to budget for the following expenses:

- computer equipment
- text books and reading packets
- travel, meals, lodging and personal expenses associated with attending the on-campus sessions in Richmond

Applicants are encouraged to consult a tax adviser regarding the rules and procedures governing educational deductions for income taxes.

If accepted to the professional program, students will be required to forward a nonrefundable payment of \$500 to hold a place in the class. This payment is applicable to first semester tuition and fees. Full payment for tuition and fees is due approximately 30 days prior to the beginning of each semester.

## **Ph.D. in Health Services Organization and Research Program**

The Ph.D. in Health Services Organization and Research Program is a challenging 57-credit program that prepares individuals for positions as faculty, researchers, policy analysts and top-level staff in complex health organizations. Students learn to apply research methods and scientific knowledge drawn from the behavioral and managerial sciences to the study of health organizations, services and systems. The program is designed to meet the distinctive professional development needs of (1) clinical professionals who want to prepare for positions as faculty and independent researchers, (2) administrative professionals who want to prepare for positions as faculty, researchers or consultants, and (3) researchers and policy analysts who want to create depth through specialization in health services organization and research.

Courses are distributed across four areas: foundations of health services organization and research (nine credit hours), health services organization theory (12 credit hours), health services research methods (18 credit hours), and an area of specialization (nine credit hours). Students take two written comprehensive examinations, covering health services organization theory

and health services research methods. Areas of specialization are drawn from elective courses and from independent study with faculty members in their areas of expertise, such as long-term care, mental health services, managed care, quality management or international health. The course work is sequenced so that it can be completed in two years of full-time study or three years of part-time study (exclusive of dissertation credits). In addition, nine credit hours of dissertation credit are required. Students orally defend a written dissertation proposal before their dissertation committee. Subsequently they write and orally defend the completed dissertation.

## **Admission procedures and requirements**

The program admits students with diverse educational, work and life experiences who have demonstrated a capacity to pursue a rigorous course of doctoral study. Admission is limited, competitive and open to students with clear career goals in health services administration and research.

Admission requirements include (1) a graduate degree in an academic or professional field with a GPA of "B" or higher, (2) working knowledge of college-level algebra, especially matrix algebra, (3) advanced courses in statistics and economics, (4) a minimum score of 550 on verbal and 600 on quantitative sections of the GRE, (5) for international students, scores from the Test of English as a Foreign Language; (6) transcripts and application forms, (7) three letters of recommendation, and (8) personal interviews with members of the Admissions Committee. The department recommends that candidates have at least one to two years experience in the health care industry before beginning the program. The applications deadline is April 15.

## **Financial aid**

A selected number of graduate assistantships are available, covering tuition plus a stipend of about \$8,900. Students with assistantships must pursue full-time study (12 credits each in fall and spring semesters; six credits in summer semester). Some research assistantships, paying a stipend, also are available in the department.

## **Information**

Further information may be obtained by writing the Doctoral Program Director,

Department of Health Administration,  
School of Allied Health Professions,  
Virginia Commonwealth University, P.O.  
Box 980203, Richmond, VA 23298-0203;  
by phoning (804) 828-5220 or visiting the  
Web: <http://www.had.vcu.edu>.

## **Graduate courses in health administration (HADM)**

### **HADM 602/PMCH 602 Health System Organization, Financing and Performance**

Semester course; 3 lecture hours. 3 credits. Examines the structure, functioning and financing of the U.S. health services system. Emphasizes foundational concepts for understanding and analyzing patterns of health and illness; health care cost, quality, access and utilization; workforce; competition in health care markets; and supplier, provider and payer effectiveness and efficiency.

### **HADM 606 Health Care Managerial Accounting**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Financial Accounting. A foundation course covering health care financial accounting, financial statement analysis, budgeting, reimbursement, costing and short-term decision making. Emphasizes accounting concepts and using financial data in management of providers and payers.

### **HADM 607 Financial Management in Health Organizations**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 606. Examines theory and techniques of corporate financial management as applied to health services providers and insurers including time value of money, working capital management, capital budgeting techniques, cash flow analysis and capital structure planning.

### **HADM 608 Seminar in Health Care Finance**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 606 and HADM 607. Advanced studies of financial issues and the application of analytic tools in case studies and exercises. Designed to enhance and strengthen the knowledge and skills provided in the graduate program's foundation and required courses in accounting and finance.

### **HADM 609 Health Systems Evaluation and Epidemiology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division course in statistics or business statistics. Introduces principles and methods employed in evaluation research and program evaluation as these relate to health services. Topics covered include health status measurement, evaluation design and managerial applications of epidemiology.

### **HADM 610 Health Care Management Decision Support Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 609. Applications of traditional industrial engineering techniques in health care institutions. Applications of operations research techniques to health care planning, control and decision making including deterministic, and stochastic decision analysis models and their use in health service administration.

### **HADM 611 Hospital and Medical Law**

Semester course; 4 lecture hours. 4 credits. Examines basic principles and practices of law affecting hospitals and medical practice: the legal aspects of patient care and treatment, medical services, and other hospital-patient related functions and employment law.

### **HADM 612 Health Information Systems and Performance**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 609 and HADM 610. Analysis of current information and management systems including workforce planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems and patient care systems. Evaluation of alternative uses of computer technology in health care.

### **HADM 614 Health Care Marketing**

Semester course; 3 lecture hours. 3 credits. Foundational theories, concepts and techniques of marketing applied to the distinctive properties of health care services. Emphasis placed on the role of marketing and aligning organizational capacity and health care needs; market analysis and planning; strategic marketing management; tactical marketing mix design; designing and managing service delivery systems and developing new offerings.

### **HADM 615 Health Care Politics and Policy**

Semester course; 3 lecture hours. 3 credits. Examines the political process with particular emphasis on the impact of politics on health care. Focuses on current political issues in the health field, examining conflicts and anticipating effects on the health system.

### **HADM 621 Advanced Medical Informatics: Technology-Strategy-Performance**

Semester course; 3 lecture hours. 3 credits. Focuses on use of technology for improving operational efficiencies, quality of care and market competitiveness. Explores various application technologies within the framework of technology-strategy-performance including: telemedicine, cyber surgery, Web-enabled clinical information systems, clinical decision support systems, artificial intelligence and expert systems, and risk-adjusted outcome assessment systems.

### **HADM 624/ECON 624 Health Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources, and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial or controversial issues in the health care field.

### **HADM 626/PMCH 617 International Health**

Semester course; 3 lecture hours. 3 credits. Offered: I, II. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

### **HADM 631 Managed Care**

Seminar course; 3 lecture hours. 3 credits. Prerequisites: Two semesters of graduate work and permission of the instructor. Examines the relationships between purchasers and providers of health care services and the development of new systems of financing and delivery that seek to improve performance and accountability.

### **HADM 638 Administration of Long-term Care (LTC) Facilities and Programs**

Semester course; 3 lecture hours. 3 credits. Focuses on unique knowledge and skills considered essential to effective long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human and conceptual problems unique to LTC are addressed through cases and field exercises.

### **HADM 645 Structure and Functions of Health Organizations**

Semester course; 3 lecture hours. 3 credits. Surveys concepts from organizational and management theories applicable to health organizations. Considers issues in organizational structure, strategy and processes for health care organizations.

### **HADM 646 Organization Behavior and Design in Health Care Management**

Semester course; 3 lecture hours. 3 credits. Surveys the key concepts of organization behavior and design as they apply to health care management. Focuses on both micro and macro issues including designing and coordinating structures and jobs, managing teams and workgroups, assessing organizational effectiveness, managing organizational politics and conflicts, understanding organizational culture, fostering innovation and creativity, addressing the organizational psychology of the health care workforce and emphasizing the role of leadership.

### **HADM 647 Operations Management in Health Care Organizations**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 646. Analysis of the current state of management study and practice with the objective of achieving a balanced development of both knowledge and skills in solving the operations problems of health institutions. The managerial process is critically examined with emphasis on leadership behavior and development, structure and purpose of health care organization subunits, interfunctional coordination and organizational processes.

### **HADM 648 Strategic Management in Health Care Organizations**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 614 and 647. Integrative seminar on strategic decision making in health care organizations. Considers the concepts and alternative models of strategic management, the strategic management process and the evaluation of strategic decisions.

### **HADM 661 Physician Practice Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Completion of first year of M.H.A. Program or permission of instructor. Provides a practical overview of management skills and tools necessary to assist a physician group with an efficient service delivery organization. Discusses issues in the larger health care business environment that affect physician professional practice and the operational factors that define a successful organization now and in the future.

### **HADM 682 Executive Skills I**

Semester course; 1 lecture hour. 1 credit. Prerequisite: HADM 646. Applied course in executive skills and behavior of the health care executive. Focus is on the health care executive leadership development and personal effectiveness.

### **HADM 683 Executive Skills II**

Semester course; 1 lecture hour. 1 credit. Prerequisite: HADM 682. Advanced applied course in executive skill development. Focus is on the health care executive leader and development of skills relating to the external environment of health care organizations. Emphasizes relationships with physicians, governing boards, regulatory bodies, donors and other key stakeholders.

### **HADM 690 Departmental Research Seminar**

Semester course; variable credit. Research seminar that focuses on research design and methods organized under a single topic or a series of related topics in health services research. Applied research training for master's-level students.

### **HADM 691 Special Topics in Health Services Organization and Research**

3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Course is devoted to specialized content area for health administration. Examples include physician practice management and advanced managed care.

### **HADM 692 Independent Study in Health Administration**

1-3 credits. Prerequisite: Permission of instructor. Special study conducted under the guidance of a faculty sponsor.

### **HADM 693, 694, 695 Practicum in Health Services Administration**

I: 2 credits; II: 3-5 credits; III: 3 credits. Prerequisite: Admission to the administrative residency. Examination of contemporary problems and issues in the organization, administration and evaluation of health services. A principal focus is the application of alternative approaches to administrative problem solving. Special emphasis is placed on understanding and analysis of the internal and external factors that influence decision making in health care organizations.

### **HADM 697 Directed Research**

Semester course; variable credit. Special course offered under the guidance of a faculty sponsor for one or more students to design and implement an applied research project in the field setting. Focuses on the application of research methods to policy or operational problems of health care institutions.

### **HADM 701 Health Organization Design and Assessment**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 704 and HADM 705 or permission from instructor. Analysis of medical care organizations at both micro and macro levels. Critical review of empirical research in organizational analysis and design. Identifies measurement issues related to quality of care and to formulation of evaluative research on health service programs.

### **HADM 702 Health Care Financing and Delivery Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 701, HADM 704 and HADM 705. Critical review and evaluation of major innovations in organization, delivery and financing of health care services. Selected topics may include risk assessment analysis of alternative health care delivery systems and consideration of alternative public financing of health care.

**HADM 704 Foundations of Health Service Organization Theory**

Semester course; 3 lecture hours. 3 credits. Examines the roots of foundational theories and concepts in organization theory and their application to research on health care organizations and systems. Emphasizes the environment and structure of health care organizations and systems.

**HADM 705 Advanced Health Service Organization Theory**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 704 or permission of instructor. Examines, in depth, selected organization theories, emphasizing their application in current health services research. Also investigates the process of theory growth on health-services organizations.

**HADM 760 Quantitative Analysis of Health Care Data**

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 624 and HADM 609 or permission of instructor. Research course emphasizing computer application and statistical analyses of health care data generated from secondary sources, including data envelopment analysis.

**HADM 761 Health Services Research Methods I**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division course in statistics. Research as a systematic method for examining questions derived from related theory and/or health service practice. Major focus is on the logic of causal inference, including the formulation of testable hypotheses relating to health services organization and management, the design of methods and measures to facilitate study, and the concepts, principles and methods of epidemiology.

**HADM 762 Health Services Research Methods II**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 761, and MRBL 632 or equivalent. Application of multivariate statistical analysis and evaluation research methods to health services research. Emphasis is placed on the use of advanced statistical methods (e.g., LISREL, Event History Analysis) and designs to analyze panel data in the health field.

**HADM 763 Health Program Evaluation**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 760, 761, or permission of instructor. Analysis of current evaluation research on personal health services and programs in a variety of social and health contexts. Emphasis is placed on the measurement of health care outcomes and the design of experimental and quasi-experimental studies in the health field.

**HADM 792 Independent Study in Health Services Organization and Research**

Semester course; 1-3 credits. Special study or research leading to a publication. Conducted under the guidance of a faculty sponsor.

**HADM 793 Research Practicum**

Semester course; 1-3 credits. Available only to second year students. Supervised investigation of selected problems in health services research. Includes conducting and analyzing field research.

**HADM 898, 899 Doctoral Dissertation in Health Services Organization and Research**

Semester course; 1-9 credits. A minimum of nine semester hours required for Ph.D. degree. Prerequisite:

Completion of required course work and comprehensive examination. Dissertation research under direction of faculty adviser.

**Graduate courses in Executive M.S. in Health Administration Degree Program (HADE)**

**HADE 602 Health Systems Organization, Financing and Performance**

Semester course; 3 credits. Examines the structure, functioning and financing of the U.S. health services system. Emphasizes foundational concepts for understanding and analyzing patterns of health and illness; health care cost, quality, access and utilization; work-force; competition in health care markets; and supplier, provider and payer effectiveness and efficiency.

**HADE 606 Health Care Managerial Accounting**

Semester course; 3 credits. Prerequisite: Permission of the instructor. A foundation course covering health care financial accounting, financial statement analysis, budgeting, reimbursement, costing and short-term decision making. Emphasizes accounting concepts and using financial data in management of providers and payers.

**HADE 607 Financial Management in Health Organizations**

Semester course; 3 credits. Prerequisites: HADE 606. Examines theory and techniques of managerial corporate management as applied to health service providers and insurers including time value of money, working capital management, capital budgeting techniques, cash flow analysis and capital structure planning.

**HADE 610 Health Care Management Decision Support Systems**

3 credits. Application of operations research and industrial engineering techniques to increasing health service organization production efficiency. Managerial applications of production planning/control and decision models in health service organizations are emphasized.

**HADE 611 Health Care Organization and Management Law**

2 credits. Elements of law and legal principles as they apply to the provision and financing of personal health care services. Emphasis is placed on a corporate law, contracts, medical malpractice, tort liability, medical-legal issues, and employment/labor law. Provides a legal foundation for the practice of health administration.

**HADE 612 Health Information Systems and Performance**

Semester course; 3 credits. Prerequisite: HADE 610 and permission of the instructor. Analyzes current information and management systems including workforce planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems and patient care systems. Evaluates alternative uses of computer technology in health care.

**HADE 613 Employment and Labor Law for Health Care Organizations**

2 credits. Presents elements of law and legal principles as they apply to the organization and delivery of health services as embodied in employment and labor contractual arrangements. Emphasizes corporate law, contracts, labor and employment law and principles with applied

problems and case work. Provides a legal foundation for the practices of health administration related to human resource management.

**HADE 614 Health Care Marketing**

3 credits. Fundamental theories, concepts and techniques of marketing applied to the distinctive properties of health care services. Emphasizes the role of marketing and aligning organizational capacity and health care needs; market analysis and planning; strategic marketing management; tactical marketing mix design; designing and managing service delivery systems and developing new offerings.

**HADE 615 Managerial Epidemiology**

Semester course; 2 credits. Focuses on analytical techniques to study and measure the health or populations and to evaluate programs. Topics covered include health status measurement, evaluation design and managerial applications of epidemiology.

**HADE 624 Health Economics**

3 credits. Foundational concepts of microeconomic theory and their application in analyzing health care policy; understanding the structure and dynamics of health care markets; and monitoring and controlling the allocation of resources within health organizations.

**HADE 631 Managed Care**

Semester course; 3 credits. Prerequisites: Two semesters of graduate work and permission of the instructor. Examines the relationships between purchasers and providers of health care services and the development of new systems of financing and delivery that seek to improve performance and accountability.

**HADE 645 Health Care Organization and Management Theory**

3 credits. A survey of contemporary organization and management theory focusing on concepts and techniques particularly relevant to health service financing and delivery organizations. Emphasizes the health care organization's environment, goals, strategy, structure and management processes.

**HADE 646 Organization Behavior and Design in Health Care Management**

Semester course; 3 credits. Surveys the key concepts of organization behavior and design as they apply to health care management. Focuses on both micro and macro issues, including: designing and coordinating structures and jobs, managing teams and workgroups, assessing organizational effectiveness, managing organizational politics and conflicts, understanding organizational culture, fostering innovation and creativity, and addressing the organizational psychology of the health care workforce.

**HADE 648 Strategic Management in Health Care Organizations**

3 credits. Focuses on the formulation, implementation, and evaluation of strategy in health care financing/delivery organizations. Emphasizes concepts dealing with industry structure; the strategic management process; achieving and sustaining competitive advantage.

**HADE 681 Special Topics in Health Administration**

Variable; 1-3 credits. Offered each semester. Investigate a specialized content area in a semester-long, seminar format. Topics may change from semester to semester.

**HADE 690 Leadership and Health Care Organizations**

Semester course; 3 credits. Analyzes the current management/leadership role of the health care executive. Focuses on the requisite knowledge, skills and values essential to success. Involves students in assessing their own leadership styles and skills and discussing key concepts of leadership in various health care organizations and structures.

**HADE 691 Health Care Organization Diagnosis and Planning**

1 credit. Provides an opportunity for students to integrate as well as apply knowledge gleaned from prior course work and to share individual experiences in assessment of and correction of organizational problems that are either operational or strategic.

**HADE 692 Independent Study in Health Administration**

Variable credit. Offered each semester. Offered in all semesters for students to investigate and study topics of major interest.

For descriptions of courses in other schools and departments, see the appropriate section in this bulletin and the Undergraduate Bulletin.

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**Department of Nurse Anesthesia**


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Biddle, Clarence, Professor

Ph.D. University of Missouri  
Nurse anesthesia, research.

Drain, Cecil, Professor

Ph.D. Texas A & M University  
Nurse anesthesia, higher education.

Fallacaro, Michael, Professor and Department Chair

D.N.S. State University of New York at Buffalo  
Nurse anesthesia, higher education, research.

Hartland, William, Assistant Professor

Ph.D. Virginia Commonwealth University  
Nurse anesthesia, adult education.

Hotchkiss, Melissa, Assistant Professor

M.S. Virginia Commonwealth University  
Nurse anesthesia.

Monti-Seibert, Elizabeth, Associate Professor

M.S.N. Frances Payne Bolton School of Nursing  
Nurse anesthesia, higher education, research.

**Basic professional program history**

The program was first organized in 1969 as the School of Nurse Anesthetists, thus becoming the first academic program to be implemented in the newly organized School of Allied Health Professions on the MCV Campus.

A Letter of Intent for a proposed Master of Science in Nurse Anesthesia Program was submitted to the Commonwealth's Council on Higher Education in 1977. When approved in May 1978, the graduate degree in nurse anesthesia became the first such offering within the profession of nurse

anesthesia. While of major importance to the university, it hallmarked a significant milestone for the profession of nurse anesthesia. The first class of graduate students was admitted in the fall of 1979 and graduated in the fall of 1981. A second hallmark was achieved in 1979 with the approval of the postgraduate curriculum for practicing Certified Registered Nurse Anesthetists (CRNA) offering a master of science in nurse anesthesia degree. The first students graduated in the summer of 1983.

**Philosophy**

The philosophy of the department reflects the beliefs of the faculty and provides the foundation for the curriculum in the program. The department's philosophy is synergistic with the mission and goals of the School of Allied Health Professions and VCU.

The department is a social agency dedicated to the education and development of health care professionals in the field of nurse anesthesia. Consequently, the faculty recognizes and accepts the responsibility entrusted to it for the learning experiences of its students.

The philosophical orientation of the faculty subscribes to the belief that learning is a developmental process through which cognitive, affective and psychomotor behaviors are developed and/or modified. This process includes the acquisition of information, the transfer of knowledge, the evaluation of new skills, and the development of a professional attitude and bearing.

The faculty subscribe to the belief that the learning experience is both positive and rewarding. It is a transactional experience between the student and teacher through formal and informal processes. The program's objective is the production of knowledgeable and skillful CRNAs. Hence, learning is a lifelong process that results in a change in thinking, values and behavior. The teaching-learning process includes teacher-learner interaction in: setting goals, assessing, and selecting learning experiences; determining instructional methods and evaluating the learner's progress. Learning experiences are planned in manageable segments and provide for integration and continuity in the attainment of knowledge, skills and attitudes consistent with the educational objectives and the individual needs of students. Each student is a unique human being possessing dignity, worth and the right to equal educational opportunities. Faculty and students share the responsibility for creating an educational climate which reflects democratic val-

ues; fosters intellectual inquiry and creativity, and encourages the maximum development of each individual's potential.

The American health care system is becoming progressively complex. Technological advances and changing economic patterns foster competition for scarce resources while the patient population is becoming quite diverse. As a result, the role of the CRNA is becoming increasingly collaborative and complementary with other health professionals. In this environment, CRNAs have more responsibility and authority for coordination, decision making, and leadership of the multidisciplinary team, as well as for research, planning, and development of health resources.

Graduate education in nurse anesthesia at the master's level builds upon baccalaureate education with a nursing focus. It is designed to allow graduates the opportunity to become leaders and make significant contributions with the intended outcome of improving health care and advancing nurse anesthesia theory and practice through research. Consequently, the program prepares CRNAs through a team concept of a joint practice of anesthesia care composed of both nursing and medical components to meet the current and emerging health needs of society.

**Objectives**

The overall objective of the program is to prepare registered professional nurses for practice in the art and science of the specialty of nurse anesthesia. Given a patient or patient care situation in the practice of nurse anesthesia, the graduate will:

- formulate and discuss a patient's Anesthesia Care Plan (ASA Classification I-V),
- implement and evaluate anesthesia management plans,
- perform and utilize appropriate procedures during the anesthetic management of a patient,
- evaluate the postoperative course of a patient,
- perform, within medically established guidelines, resuscitation of the newborn infant, child or adult,
- function, within medically established guidelines, as a team leader for cardiovascular and/or pulmonary emergencies,
- provide first echelon care and maintenance of all anesthesia equipment, and
- develop interpersonal behaviors consistent with that of a health care professional.

## Accreditation

The nurse anesthesia program is fully accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs. Graduates are eligible to take the examination for certification conducted by the Council on Certification of Nurse Anesthetists.

## Admission requirements

In addition to the general university requirements, the requirements for admission to the Master of Science in Nurse Anesthesia Program are:

- baccalaureate degree (nursing preferred),
- current licensure as a registered professional nurse in Virginia (by completion of the first semester),
- cumulative undergraduate GPA of 3.0 or higher on a 4.0 scale (preferred),
- upper-division undergraduate organic chemistry course, no lab required (suggested),
- completion of the GRE within five years of application,
- a minimum of one year's experience in an area of acute/critical care nursing (recent),
- personal interview with members of the Admission Committee (by invitation), and
- three professional references.

Further inquiries should be made to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051, (804) 828-6916.

## Curriculum

	credits
<b>Fall semester I</b>	
NRSA 601 Principles and Practice of Nurse Anesthesia I	4
NRSA 601L Laboratory in Principles of Practice of Nurse Anesthesia I	1
PHTX 515 Pharmacology for Nurse Anesthetists I	3
PHIS 501 Advanced Mammalian Physiology I	5
	13
<b>Spring semester I</b>	
MEDC 532 Medicinal Chemistry for Nurse Anesthetists	4
PHTX 516 Pharmacology for Nurse Anesthetists II	3
NRSA 602 Principles and Practice of Nurse Anesthesia II	2
NRSA 622 Clinical Practicum I	1
NRSA 642 Professional Aspects of Anesthesia Practice I	1
	11

### Summer session I

NRSA 633 Pathophysiology for Nurse Anesthesia	3
NRSA 603 Principles and Practice of Nurse Anesthesia III	3
NRSA 643 Professional Aspects of Anesthesia Practice II	1
NRSA 623 Clinical Practicum II	1
NRSA 683 Research Methods in Nurse Anesthesia Practice	3
	11

### Fall semester II

NRSA 699 Directed Research in Nurse Anesthesia or NRSA 798 Thesis	1
NRSA 624 Clinical Practicum III	6
NRSA 604 Principles and Practice of Nurse Anesthesia IV	2
	9

### Spring semester II

NRSA 699 Directed Research in Nurse Anesthesia or NRSA 798 Thesis	1
NRSA 625 Clinical Practicum IV	6
NRSA 605 Principles and Practice of Nurse Anesthesia V	2
NRSA 645 Professional Aspects of Nurse Anesthesia Practice II	1
	10

### Summer session II

NRSA 699 Directed Research in Nurse Anesthesia or NRSA 798 Thesis	1
NRSA 626 Clinical Practicum V	6
NRSA 606 Principles and Practice of Nurse Anesthesia Practice IV	2
	9

### Fall session III

ALHP 591 Special Topics in Nurse Anesthesia	2
NRSA 627 Clinical Practicum VI	6
NRSA 647 Professional Aspects of Anesthesia Practice III	1
	9

## Post-certification CRNA Registered Master's Program

The Department of Nurse Anesthesia offers, based on advanced standing, a master of science in nurse anesthesia for the certified registered nurse anesthetist (CRNA).

## Philosophy

The master of science degree is basic to entry-level specialization in nurse anesthesia. This practice of nursing is viewed as an expanded role in which the nurse anesthetist, as a clinical specialist, provides nursing and medically prescriptive services

for the patient presenting for anesthesia. Anesthesia services can be provided best through a team concept composed of nursing and medical components.

The postgraduate CRNA Master of Science in Nurse Anesthesia Program curriculum is a single track design with a clinical or teaching option. This approach best reflects the achievement of the programs' stated objectives. This curriculum parallels the basic Master of Science in Nurse Anesthesia degree which ensures an expanded theoretical knowledge base and increased clinical competence. The similarities between the postgraduate and generic CRNA programs provide uniform credibility in the degree awarded.

## Curriculum – Postgraduate CRNA

Four semesters (16 months)

Fall semester	credits
ALHP 591 Special Topics	2
PHTX 515 Pharmacology for Nurse Anesthetists I	3
PHIS 501 Mammalian Physiology I	5
	10

### Spring semester

MEDC 532 Medicinal Chemistry for Nurse Anesthetists	4
PHTX 516 Pharmacology for Nurse Anesthetists II	3
NRSA 683 Research Methods in Nurse Anesthesia Practice	3
	10

### Summer session

NRSA 633 Pathophysiology for Nurse Anesthetists	3
NRSA 699 Directed Research in Nurse Anesthesia or NRSA 798 Thesis	2
ALHP 591 Special Topics	2
NRSA 676 Teaching Methodologies for the Nurse Anesthetist	2
	9

### Fall semester

NRSA 699 Directed Research in Nurse Anesthesia or NRSA 798 Thesis	1
NRSA 574 Teaching in Nurse Anesthesia Programs	2
NRSA 627 Clinical Practicum IV	6
	9

## Admission requirements

Requirements for admission to the Master of Science in Nurse Anesthesia for the Postgraduate Certified Registered Nurse Anesthetist (CRNA) are:

- a baccalaureate degree (nursing preferred),



- graduation from a nationally accredited educational program in nurse anesthesia,
- certification by a national examination as CRNA,
- current recertification as a CRNA by the Council on Recertification for Certified Registered Nurse Anesthetists,
- current licensure as a registered professional nurse in Virginia (by completion of the first semester),
- cumulative GPA of 3.0 or higher on a 4.0 scale (preferred),
- completion of the GRE within five years of application,
- upper-division undergraduate organic chemistry course, no lab required (recent),
- a minimum of one year's experience as a CRNA,
- references from current supervising nurse anesthetist (CRNA), chair/chief anesthesiologist, and one professional colleague,
- personal interview with members of the Admissions Committee by invitation, and
- proficiency examination (advanced standing).

### Advanced standing

Advanced standing is based on:

- graduation from a nationally accredited educational program in nurse anesthesia,
- certification by examination as a Certified Registered Nurse Anesthetist (CRNA),
- current recertification as a CRNA by the Council on Recertification for Certified Registered Nurse Anesthetists, and
- proficiency examination. Part A – Written: 100 multiple choice objective questions; Part B – Oral: two anesthesiologists and two CRNA graduate faculty. Advanced standing of one-third of the generic master of science degree in nurse anesthesia curriculum will be awarded for the following courses (non-transferable to the VCU transcript).

	credits
NRSA 601 Principles and Practice of Nurse Anesthesia I	4
NRSA 602 Principles and Practice of Nurse Anesthesia II	2
NRSA 603 Principles and Practice of Nurse Anesthesia III	3

NRSA 642 Professional Aspects of Anesthesia Practice I	1
NRSA 645 Professional Aspects of Anesthesia Practice II	1
NRSA 647 Professional Aspects of Anesthesia Practice III	1
NRSA 622 Clinical Practicum I	1
NRSA 623 Clinical Practicum II	1
NRSA 624 Clinical Practicum III	6
NRSA 625 Clinical Practicum IV	6
NRSA 626 Clinical Practicum V	6
	32

### Graduate courses in nurse anesthesia (NRSA)

#### NRSZ 601L Principles and Practice of Nurse Anesthesia I

Semester course; 3 laboratory hours. 1 credit. First in a series of six principles and practice courses. Introduces the nurse anesthesia graduate student to concepts necessary to plan and execute safe individualized anesthetics. Covers pre- and postanesthetic assessment, formulation of the anesthesia care plan, anesthetic techniques, prevention of complications, fluid management, monitoring and utilization of anesthesia equipment. Graded as pass/fail.

#### NRSA 602 Principles and Practice of Nurse Anesthesia II

Semester course; 2 lecture hours. 2 credits. Second in a series of six principles and practice courses. Presents fundamental concepts and techniques essential to clinical anesthesia practice focusing on the theoretical and practical considerations involved in the administration and management of major nerve conduction anesthesia and acute pain management.

#### NRSA 603 Principles and Practice of Nurse Anesthesia III

Semester course; 3 lecture hours. 3 credits. Third in a series of six principles and practice courses. Delineates techniques of anesthesia management that are considered situation specific for specialized procedures, diagnostic or individualized procedures including advanced airway management and anesthesia care individualized for the patient with cardiovascular and respiratory conditions.

#### NRSA 604 Principles and Practice of Nurse Anesthesia IV

Semester course; 2 semester hours. 2 credits. Fourth in a series of six principles and practice courses. Intensively covers the advanced concepts and principles of anesthetic management with an emphasis on pediatric, obstetric, endocrine and hematological disorders.

#### NRSA 605 Principles and Practice of Nurse Anesthesia V

Semester course; 2 lecture hours. 2 credits. Fifth in a series of six principles and practice courses. Intensively covers the advanced concepts and principles of anesthetic management with an emphasis on neuro-anesthesia and anesthesia delivery in specialty settings.

#### NRSA 606 Principles and Practice of Nurse Anesthesia VI

Semester course; 2 lecture hours. 2 credits. Last in a series of six principles and practice courses. Intensively covers the advanced concepts and principles of anesthetic management with an emphasis on crisis management.

#### NRSA 622-623 Clinical Practicum I and II

Continuous course; 112 clock hours. 1 credit. Introduces clinical care with supervised participation in actual administration of anesthesia. Demonstrates internalization of theoretical concepts and techniques and application in anesthetic management toward the achievement of the terminal objectives for competency in entry-level anesthesia practice.

#### NRSA 624-627 Clinical Practicum III-VI

675 clock hours. 6 credits. Provides intensive experience in all clinical anesthesia areas. All course work represents an integral phase of sequenced clinical progress toward the achievement of competency in entry-level anesthesia practice. Includes clinical rotations to various affiliate sites to gain experience in management of specialized anesthetic considerations. Emphasis on greater responsibility for a total anesthetic regime along the educational experiential continuum.

#### NRSA 633 Pathophysiology for Nurse Anesthetists

Semester course; 3 lecture hours. 3 credits. Covers various pathological conditions and diseases of specific concern to the anesthesia provider with an emphasis on cardiovascular, respiratory, excretory, endocrine, infectious diseases, nutritional, neuromuscular and neurological disorders.

#### NRSA 642 Professional Aspects of Anesthesia Practice I

Semester course; 1 lecture hour. 1 credit. Provides the graduate nurse anesthesia student an opportunity to focus on a variety of professional issues including but not restricted to the history of nurse anesthesia, roles of the nurse anesthetist and the American Association of Nurse Anesthetists, professional involvement, governmental and nongovernmental regulations of nurse anesthesia practice and standards of care.

#### NRSA 645 Professional Aspects of Anesthesia Practice II

Semester course; 1 lecture hour. 1 credit. Provides the graduate nurse anesthesia student an opportunity to focus on a variety of professional issues including but not restricted to health care delivery systems, assessing and selecting practice settings and employment options, medical ethics and chemical dependency.

#### NRSA 647 Professional Aspects of Anesthesia Practice III

Semester course; 1 lecture hour. 1 credit. Provides the graduate nurse anesthesia student an opportunity to focus on a variety of professional issues including but not restricted to reimbursement, influencing health care policy, competence, quality assessment, risk management, departmental management, nurse anesthesia and the legal system, documentation of anesthesia care and current issues and their potential effects on the profession of nurse anesthesia.

**NRSA 676 Teaching Methodologies for the Nurse Anesthetist**

Semester course; 2 lecture hours. 2 credits. Covers principles of teacher/learner communication, presentation strategies and methods of evaluation pertinent to nurse anesthesia education and includes instructional tools, their application and instructional design.

**NRSA 683 Research Methods in Nurse Anesthesia Practice**

Semester course; 3 lecture hours. 3 credits. Required of all nurse anesthesia students. Understands and applies the steps involved in the research process. Emphasizes concepts, procedures and processes appropriate for use in research. Develops a research proposal by exploring a topic in the area of anesthesiology. Applies inferential and advanced statistical tests to hypothetical data. Critically analyzes and evaluates anesthesia research studies.

**NRSA 699 Directed Research in Nurse Anesthesia**

1 credit. May be repeated up to four semesters. Prerequisite: Students are required to take NRSA 699 or NRSA 789. Provides the student an opportunity to gain experiences through guided library and practicum research in the area of anesthesiology. Executed under the supervision of an adviser and in conjunction with a research committee.

**NRSA 798 Thesis**

1 credit. May be repeated up to four semesters. Prerequisite: Students are required to take NRSA 699 or NRSA 798. The master's thesis provides the student an opportunity to select, organize and report the results of an investigation into a specific area of anesthesiology. This research is executed under the supervision of an adviser and in conjunction with a thesis committee.

## Department of Occupational Therapy

Cash, Sandra H., Associate Professor, Assistant Chair, Fieldwork Coordinator, and Director, Entry-level Graduate Program  
M.S. Virginia Commonwealth University  
Physical disabilities, orthotics, clinical education.

Copolillo, Al, Assistant Professor  
Ph.D. University of Illinois at Chicago  
Adult physical rehabilitation, gerontology, assistive device use, cognition and perception, health promotion, health education.

Koontz Lowman, Dianne, Assistant Professor  
Ed.D. University of Virginia  
Special education, pediatrics, children with special health care needs.

Lane, Shelly J., Professor and Department Chair  
Ph.D. University of Texas Health Sciences Center  
Infants and children with developmental disabilities, assistive technology with young children, sensory integration and processing.

Madigan, M. Jeanne, Professor Emeritus  
Ed.D. Loyola University  
Pediatrics, curriculum development, administration.

Shepherd, Jayne T., Associate Professor  
M.S. Virginia Commonwealth University  
Developmental disabilities, physical disabilities, environmental adaptations.

Simons, Dianne F., Assistant Professor  
M.S. Virginia Commonwealth University  
Ph.D. University of Virginia  
Mental health, instructional technology.

Teitelman, Jodi L., Associate Professor  
Ph.D. Virginia Commonwealth University  
Gerontology, adult development, wellness, health promotion, health care trends.

Watts, Janet H., Associate Professor and Director of Post-professional Graduate Studies  
Ph.D. Virginia Commonwealth University  
Psychosocial occupational therapy, theory, instrument development, geriatric practice, outcomes research.

Wolfe, Eleanor V., Associate Professor Emeritus  
M.S. Texas Woman's University  
Pediatrics, physical dysfunction.

## History

The program in occupational therapy was initiated at Richmond Professional Institute in 1942. In 1965, the graduate program leading to a master of science degree in basic professional education in occupational therapy was initiated. The School of Occupational Therapy became a department in the School of Allied Health Professions in 1970.

## Philosophy

The philosophy of the Department of Occupational Therapy embraces the Philosophical Base of Occupational Therapy stated by the American Occupational Therapy Association (1979):

Man is an active being whose development is influenced by the use of purposeful activity. Human beings are able to influence their physical and mental health and their social and physical environment through purposeful activity. Human life is a process of continuous adaptation. Adaptation is a change in function that promotes survival and self-actualization. Biological, psychological and environmental factors may interrupt the adaptation process at any time throughout the life cycle, causing dysfunction. Purposeful activity facilitates the adaptive process. Purposeful activity (occupation), including its interpersonal and environmental components, may be used to prevent and mediate dysfunction and to elicit maximum function. Activity as used by occupational therapists includes both an intrinsic and a therapeutic purpose. (AOTA. [1979]. The philosophical base of occupational therapy. *AJOT*, 33, 785.)

## Mission

The primary mission of the Department of Occupational Therapy is the preparation of excellent, innovative, adaptable and responsible occupational therapists as professional leaders for the state and the nation.

In pursuit of this mission, the department:

- fosters student commitment to scientific inquiry and professional competence, and promotes personal growth, balance and dedication to lifelong learning,
- promotes faculty excellence and collaboration in teaching, scholarship, and research that models integrity and competence,
- collaborates with the community through education, consultation and the development of strong linkages with clinical educators and the community, and
- interacts dynamically with the occupational therapy profession and stakeholders, contributing proactively to the evolution of the profession.

## Accreditation

The professional master's degree program to become an occupational therapist is accredited by the Accreditation Council for Occupational Therapy Education, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220; telephone (301) 652-2682.

## Facilities

The educational facilities of the Department of Occupational Therapy are located in the Virginia Mechanics Institute Building at the northeast corner of 10th and Marshall streets.

During the professional master's degree program, fieldwork assignments are made for students in a wide range of clinics and agencies in the Richmond metropolitan area. A 24-week extended fieldwork requirement will be arranged in approved clinical education facilities throughout the United States.

## Honors and awards

### A. D. Williams Award

An annual award presented to second-year students with cumulative 4.0 GPAs for the entire curriculum.

## Commonwealth of Virginia Graduate Fellowship Award

These awards are presented to graduate student(s) with high academic and professional potential. Preference is given to residents of Virginia, and financial need is considered.

## Patti Ann Maurer Scholarship

This award is given to the top ranked applicant for the professional master's program.

## Gudger-Garris Scholarship Award

This award is a bequest from Lucille Gudger. It is awarded each year to students in the occupational therapy program in good academic standing with financial need.

## C.A. Kooiman Memorial Award

This award is given in memory of Mr. Kooiman, director of the occupational therapy curricula from 1961 to 1976. The award recipient is chosen by the graduating class as the person who best exemplifies the nature and characteristics of Mr. Kooiman.

## Programs

Two courses of study are offered:

1. A Master of Science in Occupational Therapy Program, a professional degree program designed for students who wish to become occupational therapists. This program may be completed in eight consecutive semesters. Applications will be accepted from students who have completed at least three year's of bachelor's degree course work (90 semester credits). The professional master's degree program includes academic courses, research activities, and a minimum of 24 weeks of full-time fieldwork. Visit the department's Web site: <http://www.sahp.vcu.edu/occu/>.
2. A postprofessional master of science degree program in occupational therapy is available for registered occupational therapists. It is a distance education program combining internet-based course work with brief intensive on-site instructional periods. A minimum of 33 semester hours, including a thesis, is required. Visit the department's Web site: <http://www.sahp.vcu.edu/occu/html/post.htm>.

## Academic regulations

Students are admitted to the occupational therapy programs with the expectation that they will direct maximum time and effort to the learning process. Outside activities must be scheduled by students for such dates and hours that permit full compliance with the time requirements for course work. Tardiness, lack of regular attendance, or failure to meet deadlines for course assignments will not be excused because of employment or other outside activities.

To continue in the graduate curriculum, students are expected to maintain a cumulative GPA of 3.0 based on course work following matriculation.

- Graduate students who fail to maintain a 3.0 cumulative GPA or receive a grade of "D" (regardless of the cumulative GPA) will automatically be placed on probation and will be notified of probationary status.
- Conditions of probation: students must earn a quality point average the semester of probation sufficient to result in a cumulative GPA of 3.0 in order to be removed from probationary status.

Students who are on probation due to receiving a "D" grade must retake that course, achieving a grade of "C" or better while also meeting all other academic standards.

Conditions of probation also may include recommendations for academic counseling, assignments by individual instructors, and other requirements identified by the Committee on Academic Standing and Student Progress. Conditions of probation will be detailed in a letter of notification of probation prepared by this committee.

Only one semester of academic probation is permitted in the program. If probationary students fail to meet academic standards (GPA of 3.0) a second semester or do not complete successfully deficient courses, they will be considered for dismissal.

As courses usually are offered only once a year and because early courses serve as prerequisites for later courses, students retaking a course or taking a reduced course load will have to continue under an adjusted curriculum plan. This will result in extending the student's time in the program.

- Students who receive an "F" grade in any required course will be considered for dismissal by the committee.

- University standards require that a graduate student must not have more than six semester hours or 20 percent of semester hours attempted, whichever is greater, with a grade of "C." Students who receive a grade of "C" on more than the allowable number of semester hours will be reviewed for possible academic termination by the Committee on Academic Standing and Student Progress. Students who are not terminated for this criterion will be placed on automatic probation.
- If a student withdraws or is terminated by the clinical faculty before the completion of the fieldwork level II course, the student will receive an "F" grade for the course.

If the student withdraws, is terminated or fails a fieldwork experience, the course may be repeated only upon approval by the Committee on Academic Standing and Student Progress in consultation with the department chair and the fieldwork coordinator. Students may be dismissed from the program or be allowed to continue contingent upon fulfilling remedial activities based on a plan prepared by the fieldwork coordinator and ratified by the committee. No more than one additional fieldwork experience will be rescheduled. The opportunity to reregister and repeat the fieldwork course is contingent upon the fieldwork coordinator's ability to locate another facility willing to offer a fieldwork experience to the student and upon the support of the committee. Fieldwork II must be completed no later than 24 months following the completion of the academic phase.

- To continue in good standing, students also are expected to:
  - pay all fees,
  - maintain personal attributes and ethical behaviors consistent with professional practice as defined in the Occupational Therapy Department Student Handbook, and
  - complete fieldwork requirements to the satisfaction of clinical and academic faculty.
- Although arrangements are made in advance, each student is reviewed prior to placement in the fieldwork II education. Students must have satisfactorily completed courses prerequisite to that fieldwork experience and be recommended by the faculty. They

must demonstrate professional behavior as specified in the ethical behaviors listed in the Occupational Therapy Department Student Handbook. Medical problems may delay or prevent fieldwork placement.

## Admission requirements

Applicants for the professional master's degree program must complete the following prerequisites with a grade of "C" or better (credits are listed in semester credit hours):

	credits
English	6
Human Anatomy and Physiology (laboratory courses)	6
Social sciences	15
Must include:	
Life-span development course(s) sufficient to cover entire life span (3-6)	
Abnormal psychology (3)	
Other social sciences courses (psychology, sociology, social psychology, anthropology) (6-9)	
Statistics	3
Computer competence — the ability to use a personal computer for word processing, e-mail, online bibliographic searches and Internet list-serve discussion — is required. It is helpful to be familiar with graphics software for preparing presentations.	

These are considered minimal prerequisites, and applicants are encouraged to pursue additional study in liberal arts and science courses that develop intellectual competence, enrich interest areas and promote an awareness of the breadth of social and cultural values. To fulfill the human development prerequisite, it is important to read course descriptions carefully, as many courses say they cover the life span but primarily focus on a single area (e.g., childhood). To meet this requirement, students will need courses that prepare across the life span. To fulfill the psychology prerequisite, a course in theories of personality is highly recommended.

Experience in at least two occupational therapy settings is required. Criteria for admission include GPA (overall and prerequisite GPA will be calculated), scores on the GRE, and professional criteria, including experience, references, professional attributes and statement of professional goals. Admission is selective, as the number of applicants often exceeds the number of students who can be enrolled.

Graduates of occupational therapy programs are required to take the national certification examination to become an

Occupational Therapist Registered. The national certifying organization for occupational therapy is the National Board for Certification in Occupational Therapy (NBCOT). Other licensure or certification requirements may be established by state organizations. Some licensure or certification agencies consider individuals convicted of a felony ineligible for licensure or certification. For specific information, prospective students should contact the licensure or certification agency for occupational therapy.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

University tuition and fees apply. Additional departmental course fees are calculated each semester to cover materials and supplies. Semester course fees vary but rarely exceed \$75 per semester. Fees will not exceed \$100 each semester, per departmental policy.

## Curriculum plan

The total program is planned for completion in eight semesters of full-time study and encompasses academic and fieldwork education as well as a research project.

	credits
<b>Summer I</b>	
ANAT 525 Human Anatomy	5
OCCT 520 Occupational Therapy Applications: Kinesiology	2
OCCT 530 Nature of Occupational Therapy	2
	9

<b>Fall I</b>	
OCCT 531 Interpersonal Communication and Group Dynamics	2
OCCT 532 Life Span Occupational Development	4
OCCT 533 Occupational Therapy Principles, Values and Theories	4
OCCT 534 Occupational Therapy Evaluation and Intervention Overview	3
OCCT 620 Occupational Therapy Practice Activities I	2
	15

<b>Spring I</b>	
ANAT 529 Advanced Functional Neuroanatomy	3
OCCT 521 Occupational Therapy Applications to Neuroscience	2
OCCT 522 Interdisciplinary Medical Lectures	3
OCCT 630 Adult Evaluation and Intervention I: Foundations	3
OCCT 640 Pediatric Evaluation and Intervention I: Infant and Preschool Children	3
OCCT 660 (Section 001) Level I Fieldwork in Occupational Therapy	1
	15

## Summer II

OCCT 622 Assistive Technology in Occupational Therapy	2
OCCT 709 Research Process and Statistical Analysis in Occupational Therapy	4
	6

## Fall II

OCCT 621 Occupational Therapy Practice Activities II	2
OCCT 631 Adult Evaluation and Intervention II: Activities of Daily Living	4
OCCT 641 Pediatric Evaluation and Intervention II: Ages 6-12	3
OCCT 660 (Section 002) Level I Fieldwork in Occupational Therapy	1
OCCT 720 Research Proposal	3
	13

## Spring II

OCCT 632 Adult Evaluation and Intervention III: Work, Play/Leisure, Geriatrics	2
OCCT 642 Pediatric Evaluation and Intervention III: Adolescents with Disabilities	2
OCCT 650 Occupational Therapy in Health Care	3
OCCT 651 Administration and Supervision of Occupational Therapy Services	3
OCCT 670 Clinical Reasoning Case Course	1
OCCT 729 Research Project or OCCT 730 Practicum	3
	14

## Summer III and fall III

OCCT 680 Level II Fieldwork in Occupational Therapy	9
OCCT 681 Level II Fieldwork in Occupational Therapy	9
	18

## Total credits in program

90

Upon successful completion of the program, students are eligible to take the national certification examination. Certification is required by most employers as proof of professional competence.

## Post-professional Master of Science in Occupational Therapy

The Department of Occupational Therapy offers a Master of Science Program degree for registered occupational therapists. Visit the department's Web site: <http://www.sahp.vcu.edu/occu/html/post.htm>.

## Admission requirements

Applicants must have earned a bachelor's degree from an accredited college or university and be certified by the National

Board of Certification in Occupational Therapy, Inc. An official report of scores on the GRE is required.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

## Purpose

The Post-professional Master of Science in Occupational Therapy provides bachelor's degree, registered occupational therapists with opportunities to develop advanced clinical problem solving skills and abstract reasoning. Upon program completion, the student should have increased ability to:

- provide theory and evidence-based practice,
- engage in advanced clinical program solving,
- use research skills to assist in developing new clinical knowledge and in program evaluation, and
- fulfill expanded roles, and seek out and create roles in new settings.

## Program

The program is primarily a Web-based distance education program, with limited intensive on-campus course work for some courses with the remainder of the semester's work in either a computer- or video-based format. This program follows the traditional fall, spring and summer semester schedule. It consists of theory and research core courses, electives for concentrated study, and six credits of thesis research. Students should enter the program with a concentration and research interest identified. Concentration areas currently available include gerontology and pediatrics. Up to six credits of electives may be taken at other institutions and transferred in, with permission of adviser. The curriculum includes the following 33 credit hours of courses:

**Theory core** 9 credits  
 OCCT 671 Advanced Theory in Occupational Therapy (3)  
 OCCT 672 Dimensions of Occupation (3)  
 OCCT 673 Health Care Delivery and Occupational Therapy Practice Models (3)

**Research core** 9 credits  
 OCCT 710 Research Process in Occupational Therapy (3)  
 OCCT 711 Research Process in Occupational Therapy: Qualitative Methods (3)  
 Statistics (taken outside the department) (3)

**Thesis** 6 credits  
 OCCT 798 Thesis (3)  
 OCCT 799 Thesis (3)

**Concentration course options** 9 credits  
 (courses outside department may be taken, with approval)  
 OCCT 654 Advanced Assistive Technology Applications in Occupational Therapy: Children and Young Adult (3)  
 OCCT 655 Older Adult Advanced Assistive Technology Application in Occupational Therapy (3)  
 OCCT 656 Advanced Neuroscience Applications in Occupational Therapy (3)  
 OCCT 661 School-based Therapy (3)  
 OCCT 662 Neuroscience Review and Sensory Integration Theory (3)  
 OCCT 663 Beyond the Basics: Advanced Evaluation and Intervention in Pediatric Occupational Therapy (3)  
 OCCT 690 Occupational Therapy Seminar (1-3)  
 OCCT 691 Special Topics in Occupational Therapy (3)  
 OCCT 697 Independent Study (3)  
 OCCT 793 Clinical Specialty Practicum (3)  
 Gerontology courses

The program is designed to permit part- or full-time study. Courses are generally taught once yearly.

## Post-professional M.S. in Occupational Therapy and Certificate in Aging Studies Program

The departments of Occupational Therapy and Gerontology have developed a specialized version of the Certificate in Aging Studies Program for students completing the post-professional M.S. degree in occupational therapy. Students must meet admission requirements for the occupational therapy degree and the gerontology certificate program. The student is required to complete the following courses:

GRTY 601 Biological and Physiological Aging (3)  
 GRTY 602 Psychology of Aging (3)  
 GRTY 605 Social Gerontology (3)  
 GRTY 792 Independent Study Project in Gerontology (3)  
 GRTY elective – Any additional elective course in gerontology with approval of both the occupational therapy adviser and the gerontology department's adviser. (3)  
 OCCT 655 Older Adult Advanced Assistive Technology Application in Occupational Therapy (3)

Contact the respective departments for additional curriculum information.

## Graduate courses in occupational therapy (OCCT)

**OCCT 520 Occupational Therapy Applications: Kinesiology**  
 Semester course; 1 lecture and 2 laboratory hours. 2 credits. Addresses basic components of motion, biomechanics, joint structure, specific muscle groups and

muscle function. Analyzes functional activities necessary to carry out the tasks and roles of productive living using these principles.

### OCCT 521 Occupational Therapy Application to Neuroscience

Semester course; 2 lecture hours. 2 credits. Topics parallel those in ANAT 529. Links basic structure and organization of nervous system to function in typical individuals. Examines neuroscience correlates of diseases and disabilities. Relies on current review of neuroscience literature in matching function and dysfunction with structure and organization. Case examples across the life span used to understand these potential relationships, and link material to occupational therapy theories and frames of reference guiding practice.

### OCCT 522 Interdisciplinary Medical Lectures

Semester course; 3 lecture hours. 3 credits. Presents information on medical conditions commonly seen by occupational therapists, providing diagnostic features, associated conditions, prevalence and course for each. Addresses value and limitations of this knowledge to occupational therapy process, and need for therapists to search out information about other conditions. Introduces medical terminology and therapeutic uses, side effects and precautions of medication. Describes occupational therapy interventions and clinical pathways for certain impairments.

### OCCT 530 Nature of Occupational Therapy

Semester course; 2 lecture hours. 2 credits. Provides an overview of fundamentals of occupational therapy through the use of official documents of the American Occupational Therapy Association and other authoritative sources. Introduces practice definitions, philosophical and ethical underpinnings, professional roles and organizations, and clinical reasoning process, as well as characteristics and values recommended for successful performance as a professional occupational therapist.

### OCCT 531 Interpersonal Communication and Group Dynamics

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Introduces oral and written communication skills and group process techniques. Addresses interpersonal relationships, principles of therapeutic involvement, observation, analysis of communication patterns, effects of stigma/stereotyping, interview methods and occupational therapy terminology. Provides experiences in group leadership and assertiveness techniques. Lab exercises chart path of personal development and professional socialization.

### OCCT 532 Life Span Occupational Development

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Explores principles and theories of normal growth and development and their influence on occupational performance across the life span. Presents all domains of development and life span roles. Focuses on work/productivity, leisure/play and activities for daily living. Explores importance of significant others and environment, maintaining balance between performance areas and fulfilling expected and desired social roles. Stresses influence of temporal and environmental contexts.

### OCCT 533 Occupational Therapy Principles, Values and Theories

Semester course; 4 lecture hours. 4 credits. Examines theoretical constructs used in various models of

occupational therapy practice along with legislation, advocacy and empowerment using an historical framework. Addresses influence of legislation relevant to clients and the profession, their dynamic impact on practice patterns and advocacy issues. Emphasizes concepts integral to understanding and using human occupation as a basis for practice as well as the dynamic relationship among occupational therapy principles, values and theories.

**OCCT 534 Occupational Therapy Evaluation and Intervention Overview**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Provides an introduction to evaluation and the intervention process as it relates to performance components, areas and contexts. Focuses on general evaluation of assessments for various treatment settings and environments. Emphasis on use of assessment data to determine appropriate treatment intervention and discharge planning for individuals. Verbal communications and written documentation will be covered.

**OCCT 620 Occupation Therapy Practice Activities I**

Semester course; 4 laboratory hours. 2 credits. Introduces basic occupational therapy practice concepts and their philosophical underpinnings. Covers use of activities, the activity process, therapy as teaching/learning instrument and principles of generalization. Proficiency at performing, analyzing and adapting activities with application across the age span is developed. Involves generic applications of activity, and the introduction of ways to adapt activities. Discussions focus on elements of the therapeutic process, occupational therapy practice tools, roles and the function of the therapist.

**OCCT 621 Occupational Therapy Practice Activities II**

Semester course; 4 laboratory hours. 2 credits. Covers the use of activities, the activity process, therapy as a teaching/learning process and principles of generalization. Students increase proficiency performing and analyzing activities with application across the age span. Addresses relaxation techniques, social skills training, values clarification as well as other activities commonly used therapeutically across the life span. Identifies ways to adapt activities. Discussion focuses on elements of the therapeutic process.

**OCCT 622 Assistive Technology in Occupational Therapy**

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Provides an overview of assistive technology (AT) within a broader framework of technology. Focuses on use of AT in occupational therapy evaluation and intervention. Exposes students to tools and strategies for integrating ECUs, powered mobility, computer hardware and software, augmentative communication devices and low technology solutions into lives of people with disabilities. Provides an historical perspective on development of assistive technology. Discusses the role of the occupational therapist on an assistive technology team.

**OCCT 630 Adult Evaluation and Intervention I: Foundations**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Examines adult evaluation and treatment fundamentals that support occupational performance interventions. Covers evaluations and treatment content underlying and applicable to all performance

areas. Includes specific assessments, practical information on understanding clients with a variety of conditions and therapist skills.

**OCCT 631 Adult Evaluation and Intervention II: Activities of Daily Living**

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Examines evaluation and treatment of activities of daily living (ADL) for adults in natural and treatment environments. Focuses on occupational performance while considering underlying components and context. Students routinely apply knowledge of clinical reasoning, theoretical practice models, and contextual issues when evaluating and planning treatment for a variety of case studies covering a range of ADLs.

**OCCT 632 Adult Evaluation and Intervention III: Work, Play/Leisure, Geriatrics**

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Examines evaluation and treatment of work/productive pursuits, play/leisure for adults in all environments. Emphasizes geriatric treatment issues. Focuses on occupational performance, considering underlying components and contexts. Addresses clinical reasoning, practice models, contextual issues when evaluating and planning treatment.

**OCCT 640 Pediatric Evaluation and Intervention I: Infant and Preschool Children**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on occupational performance of infants, toddlers and preschoolers with disabilities. Explores a variety of frames of reference and evaluative and intervention approaches for children and their families in medical, home, community and educational settings. Uses a holistic approach to develop child's abilities to play/perform basic ADLs while meeting expectations of family and environment.

**OCCT 641 Pediatric Evaluation and Intervention II: Ages 6-12 Years**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on occupational performance of 6-12 year-old children with disabilities. Explores a variety of frames of reference, evaluative and intervention approaches for children, their families in multiple practice arenas emphasizing the child's performance in educational settings. Uses a holistic approach to develop child's competence in school ADLs, and play while meeting expectations of family and environment. Includes field based experiences.

**OCCT 642 Pediatric Evaluation and Intervention III: Adolescents with Disabilities**

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Focuses on occupational performance of adolescents with disabilities. Explores a variety of frames of reference and evaluative and intervention approaches for adolescents and their families in educational, work, community, home and medical settings. Uses a holistic approach to transitioning youth from public school to other life roles and systems according to their preferences and environmental expectations.

**OCCT 650 Occupational Therapy in Health Care**

Semester course; 3 lecture hours. 3 credits. Introduces contemporary issues, trends in occupational therapy health-care settings. Covers principles of managed care and impact on occupational therapy practice. Focuses on changes in practice sites, service delivery models and patient demographics. Emphasizes how occupa-

tional therapists can influence health policy, advocate for change and address emerging professional ethical issues. Encourages consideration of integrating holistic/biopsychosocial nature of occupational therapy into biomedical health-care systems.

**OCCT 651 Administration and Supervision of Occupational Therapy Services**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers management of human and non-human resources to provide efficient and effective occupational therapy services; nature of formal and informal organizations, administrative process and administrative tasks. Includes supervision, consultation and the planning of occupational therapy fieldwork education.

**OCCT 654 Children and Young Adult Advanced Assistive Technology Applications in Occupational Therapy**

Semester course; 3 credits. Provides an in-depth view of assistive technology and human-environment/technology interface for children and young adults. Focuses on the use of AT in occupational therapy evaluation and intervention. Exposes students to tools and strategies for integrating computer hardware and software, augmentative communication devices, ECUs, powered mobility, toys and low technology solutions into home, school, recreation, community and work environments. Requires student problem-solving relative to their area of pediatric or young adult research and clinical practice.

**OCCT 655 Older Adult Advanced Assistive Technology Application in Occupational Therapy**

Semester course; 3 credits. Provides an in-depth view of assistive technology and human-environment/technology interface for older adults with disabilities. Focuses on use of assistive technology in occupational therapy evaluation and intervention. Exposes occupational therapy students to tools and strategies for integrating environmental control units, powered mobility, computer hardware and software, augmentative communication devices, low vision, hearing impaired and low technology solutions into the lives of elderly assistive technology consumers. Requires students to problem solve within their area of gerontology research and clinical practice.

**OCCT 656 Advanced Neuroscience Applications in Occupational Therapy**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Requires instructor's permission for non-OT majors. Links basic structure and organization of nervous system to function in typical individuals. Students examine current neuroscience understanding of diseases and disabilities encountered in clinical practice, matching function and dysfunction with structure and organization. Presents specific cases from participant clinical experience and link cases to contemporary OT theories and frames of reference guiding practice.

**OCCT 660 Level I Fieldwork in Occupational Therapy**

Semester course; 45 clinical/seminar hours. 1 credit; provided twice during the curriculum. Enriches classroom learning by providing directed observation and participation in clinical practice settings. Provides experiences supervised by professionals working in one of a variety of clinical settings (e.g., early intervention, schools, hospitals, nursing homes, home health agencies or mental health settings). Placements

arranged to complement the treatment/intervention courses. A preliminary step to the more complex Level II Fieldwork clinical experience.

#### **OCCT 661 Occupational Therapy in the Schools**

Semester course; 3 lecture hours. 3 credits. Studies the roles and functions of occupational therapists in school settings as defined by the educational model, government regulations and service provision patterns. Emphasizes person-centered planning, parent and professional collaboration and educationally relevant approaches. Integrates the use of research and clinical reasoning to provide occupation-based practice for students with disabilities of all ages. Registration open to other professional students with permission of the instructor.

#### **OCCT 662 Neuroscience Review and Sensory Integration**

Semester course; 3 lecture hours. 3 credits. Reviews neuroscience basics related to function and dysfunction. Overviews brain structures and function on both gross and cellular levels. Examination of the sensory integration neuroscience theory base which provides foundation for additional study of brain structure as it relates to function and dysfunction. Links understanding of neuroscience with occupation and occupational performance.

#### **OCCT 663 Beyond the Basics: Advanced Evaluation and Intervention in Pediatric Occupational Therapy**

Semester course; 3 credits. Restricted to postprofessional master's in occupational therapy students. Provides in-depth view of selected occupational therapy assessment and intervention techniques for children and youth with disabilities. Exposes students to practical tools and strategies for integrating treatment into home, school, recreation, community and work environments. Requires students to investigate their own clinical reasoning skills relative to their area of pediatric interest, clinical practice and research. Specifically focuses on use of sensory integration theory and practice for infants and children, issues related to feeding and play, and the transition of adolescents with disabilities into postsecondary, work and community environments.

#### **OCCT 670 Clinical Reasoning Case Course**

Semester course; 2 laboratory hours. 1 credit. Utilizes case studies to develop clinical reasoning skills and examine evaluation and treatment alternatives for persons with occupational performance limitations. Focuses on life-span development issues, uses cases designed to integrate and develop strategies based on previously presented material. Field-based experiences will be integrated into the case discussions.

#### **OCCT 671 Advanced Theory in Occupational Therapy**

Semester course; 3 lecture hours. 3 credits. Restricted to postprofessional master's level students. Integrates current theoretical constructs incorporated in various conceptual models of practice with the clinical expertise of experienced occupational therapists through comprehensive examination of theory. Examines the clinical reasoning process and fosters high level theoretical and clinical thinking. Emphasizes the dynamic relationship between occupational therapy theory and clinical reasoning and promotes concepts integral to understanding client-based and occupation-based practice.

#### **OCCT 672 Dimensions of Occupation**

Semester course; 3 lecture hours. 3 credits. Examines a variety of topics and concepts related to the study of occupation. Relies on biological, sociological, anthropological, psychological and occupational therapy literature to ensure the investigation of various dimensions of the human as an occupational being. Case examples will be analyzed to link this material to occupational therapy theory and practice.

#### **OCCT 673 Health-care Delivery and Occupational Therapy Practice Models**

Semester course; 3 lecture hours. 3 credits. Restricted to postprofessional master's level students. Introduces contemporary issues and trends in occupational therapy health-care settings. Covers principles of managed care and impact on occupational therapy practice. Focuses on changes in practice sites, service delivery models and patient demographics. Emphasizes on how occupational therapy influences health policy, advocates change and addresses emerging professional and ethical issues. Encourages consideration of integrating holistic/biopsychosocial nature of occupational therapy into biomedically oriented health-care system.

#### **OCCT 680 Level II Fieldwork in Occupational Therapy: A**

Semester course; students must complete 40 hour/week for 12 weeks. Variable credit; may take over two semesters. Prerequisites: Successful completion (grade of "C" or better) of all required clinically related courses. Provides an in-depth experience in delivering occupational therapy services to a variety of individuals across life span, in a variety of settings. Promotes interpretation of previously learned skills and knowledge through clinical reasoning and reflective practice. Develops professionalism and competence as entry-level occupational therapists.

#### **OCCT 681 Level II Fieldwork in Occupational Therapy: B**

Semester course; students must complete 40 hours/week for 12 weeks. Variable credit with a maximum of nine credits. May take over two semesters. Prerequisites: Successful completion (grade of "C" or better) of all required clinically related courses. Clinical experience must be different from that offered in OCCT 680. Expands experience in delivering occupational therapy services to variety of individuals across life span, in variety of settings. Promotes interpretation of previously learned skills and knowledge through clinical reasoning and reflective practice. Extends skills of professionalism and competence as entry-level occupational therapists.

#### **OCCT 690 Occupational Therapy Seminar**

Variable; 1-3 credits. May be repeated for a maximum of four credits. Investigation, presentation and discussion of current problems and issues in the field of occupational therapy.

#### **OCCT 691 Special Topics in Occupational Therapy**

Semester course; 1-3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond-area occupational therapists or visiting lecturers. Format may include intensive mini-courses or workshops, an advanced course with some opportunity for election and development of knowledge and skills in a specialized area of occupational therapy.

#### **OCCT 693 Fieldwork: Psychosocial Dysfunction**

1-9 credits.

#### **OCCT 694 Fieldwork: Physical Dysfunction**

1-9 credits.

#### **OCCT 695 Fieldwork: Specialty (Optional)**

Twelve weeks full-time experience in programs providing occupational therapy services. 1-9 credits. Minimum total required for all fieldwork courses is 18 semester hours. Determination of the amount of credit and permission of the instructor and department chair must be secured prior to registration for the course. Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements include experiences in prevention, health maintenance, remediation, daily life tasks and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, camping programs, penal systems and the like. Fieldwork experiences are arranged individually, but placement in a specified location cannot be guaranteed. In the event of failure, the course may be repeated only upon recommendation by the academic and clinical faculty. Fieldwork must be completed no later than 24 months following completion of the academic phase.

#### **OCCT 697 Independent Study**

1-3 credits. The student will submit a proposal for investigating some area or problem in occupational therapy not ordinarily included in the regular curriculum. The student's desired study must be described in a contract written by the student and approved by the faculty member. The results of the study will be presented in a written or oral report.

#### **OCCT 698 Research in Occupational Therapy**

Semester course; 1-3 credits. Completion of a proposal for a research project relevant to occupational therapy.

#### **OCCT 709 Research Process and Statistical Analysis in Occupational Therapy**

Semester course; 4 lecture hours. 4 credits. Restricted to entry-level master's students. Prepares students to write research proposal for completion of the requirements of the master's degree. Covers basic steps in research process, including problem definition, literature review, design, data collection and analysis, and dissemination of findings. Applies statistical principles to occupational therapy research. Addresses quantitative and qualitative approaches. Students complete a literature review to be applied toward the master's research project.

#### **OCCT 710 Research Process in Occupational Therapy**

Semester course; 3 lecture hours. 3 credits. Prepares students to write research proposal for completion of the requirements for the master's degree. Covers basic steps in research process, including problem definition, literature review, design, data collection and data dissemination. Addresses quantitative and qualitative approaches. Students complete a comprehensive literature review to be applied toward the master's thesis research.

#### **OCCT 711 Research Process in Occupational Therapy: Qualitative Methods**

Semester course; 3 lecture hours. 3 credits. Introduces qualitative methods of research with goals of understanding the theoretical underpinnings, gaining practical

experience and developing an understanding of the "self" as an instrument. Focuses on qualitative methods in occupational therapy research and their application to practice.

**OCCT 720 Research Proposal**

Semester course; 3 lecture/seminar hours. 3 credits. Development of student research proposal.

**OCCT 729 Research Practicum**

Semester course; 3 seminar hours. 3 credits. Supervised investigation of selected problems in occupational therapy. Exposes students to varied tasks integral to research implementation. Addresses overall research design and implementation process and skills needed for publication and presentation of research. Students complete an individualized learning contract.

**OCCT 730 Research Project**

Semester course; 3 lecture/seminar hours. 3 credits. Completion of research project relevant to occupational therapy.

**OCCT 793 Clinical Specialty Practicum**

Three to nine hours of concentrated clinical experience in the student's chosen area of specialization under the supervision of an experienced clinician (minimum three hours per week for each credit), and one credit hour for guided library research related to topic of practice with preparation of a paper examining the theoretical and empirical bases of practice in specialty area. A contract is prepared by the student and approved by a faculty adviser and clinical supervisor.

**OCCT 798 Thesis**

3-6 credits. Completion of a proposal for a master's degree thesis relevant to occupational therapy.

**OCCT 799 Thesis**

1-6 credits. Completion of a master's degree thesis relevant to occupational therapy.

## Program in Patient Counseling

Bonomo, James, Instructor  
Jesuit School of Theology  
Charles-Craft, Ann, Instructor  
M.Div. Southeastern Baptist Theological Seminary  
Faulkner, Ken A., Assistant Professor  
M.Div. Southeastern Baptist Theological Seminary  
Hamilton, Stephanie, Instructor  
M.Div. Southern Baptist Theological Seminary  
Hassell, Alma, Instructor  
M.Div. Emory University, Candler School of Theology  
Humphreys, Janet, Assistant Professor  
D.Min. Louisville Presbyterian Theological Seminary  
Mutia, Lucio, Adjunct Assistant Professor  
Th.D., South East Asia Graduate School of Theology  
Tartaglia, Alexander F., Associate Professor and Chair  
D.Min. Andover Newton Theological School  
Woodfold, The'resa, Instructor  
M.Div. Interdenominational Theological Center  
Young Jr., Robert A., Associate Professor  
D.Min. Union Theological Seminary

## History

Patient counseling is the practice of communicating emphatic concern, support and sensitive spiritual counsel to the physically or emotionally troubled person in the traumas of life. There is a long history of a concerted effort toward this end at the VCU Health System. With the appointment of Dr. George D. Ossman as chaplain in 1943, the administration gave clear evidence of its awareness of the need for a specialized caring ministry to hospitalized patients and their families.

The chaplaincy program was significantly expanded in 1958 and was accredited to begin the education and clinical training of persons in patient counseling. Since then, a continuous program has been in existence and has evolved into the present program in patient counseling. Patient counseling, as it exists today, became an integrated program in the School of Allied Health Professions in 1970. A comprehensive curriculum review was completed in 1999.

## Philosophy

With the rapid growth of health care and the increasingly complex problems of medical ethics and viable delivery systems, it is very important to educate qualified persons to deal with the human dimensions of illness as well as the personal and family stressors related to it. Through this program, VCU has an opportunity to make an impact upon health care education by emphasizing the spiritual dimension of human needs in life crises. By so doing, this university has a significant role to play in the important task of keeping health care holistic and utilizing technical and scientific methodology in the context of a deep respect for the total life of persons.

## Objectives

The Program in Patient Counseling is designed to assist an individual to work in the health field as one skilled in dealing with the whole person in the context of life's crises and in a cooperative interprofessional team approach. It is offered to persons who have an existing identity in a helping or counseling profession. This includes clergy, social workers, institutional counselors, education specialists, psychologists, community health workers and others in the health care professions.

## Facilities

West Hospital (N2S) is the base for the educational program, and limited space is available in clinical areas to work with persons and families in crisis. The Main Hospital, mezzanine level, contains the chapel, family consultation room and administrative offices.

## Accreditation

The program is accredited by the Association for Clinical Pastoral Education, Incorporated. It is offered in collaboration with the (VCU Health System) Medical College of Virginia Hospitals and Physicians.

## Code of ethics

The professional behavior of the student is expected to be in accordance with the Code of Professional Ethics, as adopted by the Association for Clinical Pastoral Education, Inc. (Standards, 2002) and the Code of Ethics of the Association of Professional Chaplains.

## Programs

Students serve in the dual capacity of providing pastoral care service while learning. Extensive clinical involvement, including night and weekend responsibilities, is required for selected courses and clinical pastoral education credit. Each student receives individual supervision by a member of the faculty.

The Intern Certificate is designed to meet the outcomes of Level I Clinical Pastoral Education. This certificate is granted upon the satisfactory completion of PATC 515 or an approved equivalency of courses completed in no more than two consecutive semesters. Programs are offered in the fall, spring and summer semesters.

Final granting of the Intern Certificate requires an oral review with the faculty demonstrating completion of outcomes for Level I Clinical Pastoral Education.

The graduate certificate requires the completion of 27 credit hours of study according to one of the established curricula. Course substitutions require faculty approval.

The master of science requires 44 credit hours of study according to one of the established curricula. Course substitutions require faculty approval.

Final granting of the graduate certificate and the master of science requires an oral review with the faculty demonstrating completion of outcomes for Level II Clinical



Pastoral Education or Supervisory Clinical Pastoral Education as determined by the chosen track of study.

Students who are unsuccessful in demonstrating completion of designated clinical pastoral education outcomes in any program will be required to develop with a faculty mentor an individualized plan of study toward their completion. Typically, this plan will be accomplished through additional course work or a directed independent study.

## Admission requirements

### Intern certificate

Bachelor of arts or its equivalent; completed VCU graduate application including statement of personal history and goals; personal interview with a member of the faculty or an approved substitute.

### Graduate certificate

Bachelor of arts or its equivalent; a graduate degree in a health-related field or two years of graduate theological education; completed VCU graduate application including statement of personal history and goals; demonstrated completion of Level I Clinical Pastoral Education; personal interview with the faculty.

### Master of science

Bachelor of arts or its equivalent; completed graduate application including statement of personal history or goals; submission of the Graduate Record Examination or at least one year of graduate education with a GPA of "B" or better; personal interview with faculty.

International students should submit scores at an acceptable level (minimum of 550) on the TOEFL and give additional evidence of ability to communicate in English with faculty for admission to the graduate certificate and master of science programs.

Students seeking concurrent positions as pastoral care residents at the Medical College of Virginia Hospitals and Physicians of the VCU Health System should contact the department directly. Applicants for resident positions should have completed two years of graduate theological education or a graduate degree in a health-related field with demonstrated background in theological studies and Level I Clinical Pastoral Education in an ACPE accredited center.

## Continuation requirements, advising, transfer and part-time status

A student must maintain a minimum GPA of 3.0 in all course work completed at VCU. A student who falls below that minimum will have one semester to remedy the deficiency.

A student must register for at least one credit hour each academic year for continuation in the program. Any student who fails to register must have prior approval to do so or be dropped from the program and must reapply for reinstatement.

There is a five calendar-year maximum for students to complete the master of science degree and a seven calendar-year maximum for the dual degree. The graduate certificate program must be completed within a four calendar-year maximum. Part-time students who wish to accumulate concurrent ACPE credit need to be sure that course work is completed in accordance with ACPE standards.

A maximum of eight credits may be transferred from another university toward the master of science course requirements provided these credits have not been applied to a previous degree. A maximum of one-third of the didactic hours may be transferred from another VCU program. Dual degree candidates may apply six credits from their seminary studies to the VCU degree. Transfer is given at the discretion of the chair after consultation with the faculty, subject to university approval. Credits are not transferable to either of the certificate programs.

Students who have been admitted to the graduate certificate program may be admitted to the master of science degree with advanced standing after the completion of at least 18 credits with a "B" or better. All credits of a "B" or better will transfer to the degree program.

Upon admission to all programs students will be assigned a faculty adviser.

## Curriculum

	credits		
	summer	fall	spring

### Option I: Dual degree track

#### Year I

M.Div. <sup>+</sup>	-	-	-
PATC 501	-	1	-
M.Div. <sup>+</sup>	-	-	-
Pastoral care (seminary course)	-	-	-

#### Year II

PATC 515	9	-	-
M.Div. <sup>+</sup>	-	-	-
Ethics (seminary course)	-	-	-
M.Div. <sup>+</sup>	-	-	-

#### Year III

M.Div. <sup>+</sup>	-	-	-
PATC 555	-	5	-
PATC 561	-	2	-
PATC 635	-	2	-
PATC 556	-	-	5
PATC 562	-	-	2
Elective (taken at VCU)	-	-	2

#### Year IV

PATC 609	5	-	-
PATC 601	2	-	-
PATC 639	2	-	-
M.Div. <sup>+</sup>	-	-	-
PATC 619 (VCU course at seminary)	-	1	-
M.Div. <sup>+</sup>	-	-	-

### Option II: Chaplain certification degree track

#### Year I

PATC 555	-	5	-
PATC 561	-	2	-
PATC 635	-	2	-
PATC 556	-	-	5
PATC 562	-	-	2
Elective	-	-	2

#### Year II

PATC 609	5	-	-
PATC 601	2	-	-
PATC 639	2	-	-
Electives (Courses in 620 and 630 series, Rehabilitation Counseling or Gerontology)	-	9	-
Electives (610, courses in 620 and 630 series, Rehabilitation Counseling or Gerontology)	-	-	9

### Option III: Supervisory CPE degree track

#### Year I

PATC 653	-	4	-
PATC 601	-	2	-
PATC 661	-	3	-
PATC 654	-	-	4
PATC 663	-	-	3
Elective (665, 692 or 697 for those still in certification process)	-	-	2

#### Year II

PATC 694	7	-	-
PATC 664	2	-	-
PATC 696	-	9	-
Electives (665, 692 or 696 for those still in certification process)	-	-	9

## Certificate programs

#### Year I

PATC 515*	9	-	-
PATC 555 <sup>+</sup>	-	5	-
PATC 561 <sup>+</sup>	-	2	-
Elective <sup>+</sup>	-	2	-
PATC 556 <sup>+</sup>	-	-	5
PATC 562 <sup>+</sup>	-	-	2
Elective <sup>+</sup>	-	-	2

**Year II**

PATC 609 <sup>a</sup>	5	-	-
PATC 601 <sup>a</sup>	2	-	-
PATC 639 <sup>a</sup>	2	-	-

<sup>a</sup> M.Div. courses taken at seminary

<sup>\*</sup> Intern certificate

<sup>^</sup> Graduate certificate

## Graduate courses in patient counseling (PATC)

**The Program in Patient Counseling has an integrated curriculum in which students typically experience certain core courses concurrently.**

**Exceptions to this rule are by faculty approval only.**

**Admission to any course by students outside the department requires permission of the instructor.**

### **PATC 501 Introduction to Health Care Ministry**

Semester course; 1 lecture and 1 practicum hour. 1 credit. Introduces the student to the hospital environment through observation, reading and reflection. Taught jointly with seminary faculty. Required course for dual degree program.

### **PATC 510 Introduction to Patient Counseling**

Semester course; 3 lecture and optional clocked clinical hours. 3-5 credits. Introduces the student to the development and practice of spiritual care of patients and families. Includes case review and peer interaction. Assignment to the hospital is available to those seeking clinical pastoral education credit. Designed for the nonspecialist.

### **PATC 511 The Professional Caregiver**

Semester course; 2 lecture hours. 2 credits. Focuses upon development of professional identity and growth within the helping professions. Emphasizes the context of the health-care environment and its impact upon caregivers, patients and families. Includes practical application of theory. Incorporates the use of clinical material. Designed for the nonspecialist.

### **PATC 515 Basic Patient Counseling**

7 lecture and 300 clinical clocked hours. 9 credits. Provides an intensive course of study toward the development of pastoral skills in the hospital context. Assigns students to select clinical areas with faculty supervision. Utilizes group process and individual supervision for the review of clinical material.

### **PATC 551 Selected Issues in Health Care**

Semester course; 1 lecture hour. 1 credit. May be repeated to a maximum of two credits. Exposes the student to a number of current trends and topics relevant to the contemporary U.S. health care delivery system. Content changes from semester to semester. Utilizes the expertise of hospital personnel.

### **PATC 555 Theory and Practice of Patient Counseling I**

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisite: PATC 515 or equivalent. Emphasizes the theological foundations of pastoral care and counseling. Provides an in-depth examination of clinical material in a seminar setting.

### **PATC 556 Theory and Practice of Patient Counseling II**

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisite: PATC 515 or equivalent. Emphasizes psychological foundations of pastoral care and counseling. Provides an in-depth examination of clinical material in a seminar setting.

### **PATC 561 Group Process I**

Semester course; 2 lecture hours. 2 credits. Prerequisite: PATC 515 or equivalent. Explores, in a small group setting, the dynamics common to group behavior. Reflects upon the use of group process learning. Utilizes an experiential method of learning.

### **PATC 562 Group Process II**

Semester course; 2 lecture hours. 2 credits. Prerequisite: PATC 515 or equivalent. Focuses upon the various theories of group process. Focuses upon application of theory to a variety of clinical and administrative settings. Utilizes an experiential method of learning.

### **PATC 592 Independent Study in Patient Counseling**

Semester course; variable; 1-4 credits. May be repeated for a maximum of four credits. Provides opportunity to increase clinical and interpersonal skills in specialty areas through patient care, parallel reading and individual faculty supervision.

### **PATC 601 Theory of Group Leadership**

Semester course; 2 lecture hours. 2 credits. Prerequisite: PATC 561 or 562. Explores various theories of group leadership. Provides opportunity to test skill development within a peer context.

### **PATC 609 Supervised Clinical Practice I**

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisites: PATC 555 and 556. Provides the opportunity to apply and practice pastoral care skills with patients and their families under faculty supervision. Emphasizes professional competence toward an integration of theological, psychological and sociological aspects of spiritual care in varied clinical contexts.

### **PATC 610 Supervised Clinical Practice**

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisites: PATC 555 and 556. Provides the opportunity to apply and practice clinical skills in a pastoral care specialty under faculty supervision. Utilizes university and hospital personnel in specialty areas. May be repeated to a total of 10 credits.

### **PATC 619 Spiritual and Social Integration Seminar**

Semester course; 1 lecture hour. 1 credit. Provides in-depth reflection on the theological and social implications of ministry within the health-care environment. Course is taught jointly with seminary faculty. This course is a summary course required for persons in the dual-degree program.

### **PATC 620 Religious and Social Factors in Patient Counseling**

Semester course; 2 lecture hours. 2 credits. Provides an understanding of the theological and social factors related to hospitalization. Focuses on the use of ritual and tradition in caring for persons in crisis.

### **PATC 621 Care of the Dying**

Semester course; 2 lecture hours. 2 credits. Explores the spiritual and psychological dynamics associated with loss for patients and families. Offers special attention to the emotional and spiritual impact on caregivers that work with dying patients. Includes the use of clinical material within a group experience.

### **PATC 635 Clinical Ethics**

Semester course; 2 lecture hours. 2 credits. Applies the principles of biomedical and health-care ethics to a more informed understanding of ethical decision making in the clinical environment. Concerned with the identification, analysis and resolution of ethical problems that arise in planning for the care of patients. Emphasizes the ethical responsibilities of clinical and pastoral caregivers.

### **PATC 636 Professional Identity and Ethics**

Semester course; 2 lecture hours. 2 credits. Focuses on guidelines for professional ethics in the development and maintenance of professional and personal integrity, leadership ability and the enhancement of a congruency between spiritual, psychological and physical maturity.

### **PATC 639 Pastoral Care Management**

Semester course; 2 lecture hours. 2 credits. Surveys the theory and practice of pastoral-care management within the present health-care environment including personnel management, process improvement, benchmarking and qualitative research design. Taught cooperatively with hospital personnel.

### **PATC 653 Patient Counseling Evaluation I**

Semester course; 2 lecture and 6 practicum hours. 4 credits. Focuses upon the theory and practice of case based education and clinical evaluation relevant for pastoral supervision. Observation of and reflection upon the work of ACPE supervisors are required.

### **PATC 654 Patient Counseling Evaluation II**

Semester course; 2 lecture and 6 practicum hours. 4 credits. Continues the theoretical and practical focus of PATC 653. Students move from observation to participation in clinical evaluation of pastoral care interns.

### **PATC 661 History of Pastoral Supervision**

Semester course; 3 lecture hours. 3 credits. Focuses on the history and development of clinical pastoral education as a movement. Exposes the student to theoretical basis of clinical pastoral education as established in professional and organizational standards.

### **PATC 663 Theory of Pastoral Supervision I**

Semester course; 3 lecture hours. 3 credits. Focuses on the literature in pastoral supervision. Emphasizes the applicability of educational and personality theory relevant for clinical pastoral education.

### **PATC 664 Theory of Pastoral Supervision II**

Semester course; 2 lecture hours. 2 credits. Focuses on the literature related to cultural and gender factors relevant for pastoral supervision.

### **PATC 665 Selected Topics in Pastoral Supervision**

2 lecture hours. 2 credits; may be repeated for a total of four credits. Presents a variety of topics on supervisory theory and practice for persons seeking certification by the ACPE. Utilizes ACPE supervisors as well as university and local seminary faculty.

### **PATC 692 Independent Study in Pastoral Supervision**

Semester course; 1-4 credits, may be repeated for a total of four credits. Provides individual focus and direction of student readings in theories of pastoral supervision. Readings are selected from bibliography of the ACPE Certification Commission.

### **PATC 694 Advanced Clinical Pastoral Supervision**

Semester course; 2 lecture and 15 practicum hours. 7 credits. Prerequisite: PATC 654. Advanced attention to integration of education and personality theories with theology. Includes the actual practice of supervision under faculty guidance. Restricted to individuals admitted to candidacy status in ACPE, Inc. May be repeated.

### **PATC 696 Intensive Supervisory Practicum**

Semester course; 3 lecture and 18 practicum hours. 9 credits. Prerequisite: PATC 694. Provides opportunity for independent supervision of pastoral care interns with mentoring and evaluation by faculty. Utilizes ACPE supervisory personnel. Restricted to individuals admitted to candidacy status in ACPE. May be repeated.

### **PATC 697 Clinical Research**

Semester course; 1-5 credits, may be repeated for a total of five credits. Provides the opportunity to test the practical application of research and process improvement methods within the clinical context. Encourages the development of collaborative and interdisciplinary project development.

## **Department of Physical Therapy**

Arena, Ross, Assistant Professor  
Ph.D., P.T. Virginia Commonwealth University  
Exercise physiology/cardiopulmonary.

Donegan-Shoaf, Lisa, Assistant Professor  
Ph.D., P.T. Virginia Commonwealth University  
Clinical education.

Edge, Annabel, Assistant Professor  
M.S., P.T. Virginia Commonwealth University  
Clinical sciences.

Finucane, Sheryl D.G., Assistant Professor  
Ph.D., P.T. Virginia Commonwealth University  
Neuroanatomy/histology.

Ford-Smith, Cheryl, Assistant Professor  
M.S., P.T. Virginia Commonwealth University  
Clinical sciences.

Goldberg, Stephen J., Professor (Anatomy)\*  
Ph.D. Clark University  
Cranial nerve motor unit physiology.

Hirt, Susanne, Professor Emerita  
M.Ed., P.T. University of Wisconsin  
Neuroanatomy/gross anatomy.

Jewell, Dianne, Assistant Professor  
Ph.D., P.T. Boston University  
Health organization and research.

Lamb, Robert, Professor Emeritus  
Ph.D., P.T. University of Maryland  
Biomechanics.

Mayhew, Thomas, Associate Professor and Department Chair  
Ph.D., P.T. Medical College of Virginia of Virginia Commonwealth University  
Anatomy.

McClung, J. Ross, Professor (Anatomy)\*  
Ph.D. University of Texas at Galveston  
Neurobiology.

Michener, Lori, Assistant Professor  
Ph.D., P.T., S.C.S., A.T.C., M.C.P. Hahnemann University  
Orthopedics.

Payton, Otto, Professor Emeritus  
Ph.D., P.T. University of Maryland  
Education.

Pidcoe, Peter, Assistant Professor  
Ph.D., P.T. University of Illinois at Chicago  
Bioengineering.

Riddle, Daniel, Professor  
Ph.D., P.T. Virginia Commonwealth University  
Orthopedic physical therapy.

Snyder-Shall, Mary, Associate Professor  
Ph.D., P.T. Virginia Commonwealth University  
Neurophysiology.

Wheeler, Emma, Assistant Professor  
M.S., P.T. Virginia Commonwealth University  
Clinical sciences/clinical education.

\* Department in parenthesis indicates primary appointment.

## **History**

The Department of Physical Therapy was established in 1945 to provide basic preparation for the practice of physical therapy. Between 1945 and 1954, the program consisted of a 12-month professional course designed to train students for entry into the profession. This program was based upon at least three years of college work or the possession of a registered nurse certificate. A two-year professional program after two years of preparatory college work was initiated in 1954. This program led to the degree of Bachelor of Science in Physical Therapy. In 1968, the Department of Physical Therapy became part of the School of Allied Health Professions. The two-year professional program leading to the bachelor of science degree continued through the 1988-89 academic year.

In August 1989, the Department of Physical Therapy, School of Allied Health Professions, began a three-year professional program based on three years of previous college work. that lead to a master of science degree. On Feb. 8, 2001 the VCU Board of Visitors approved a proposal to offer a Doctor of Physical Therapy as the entry-level professional degree. The State Council of Higher Education in Virginia gave its final approval for the proposal on June 20, 2001. The first class to study the professional program began in July of 2002.

In 1946, an advanced graduate program offering the master of science degree to physical therapists was established and con-

tinued to function until 1952 when it was discontinued. The program was reinstated in 1968 and expanded when a full-time director of graduate studies was appointed in 1971. The current advanced master's degree program offers the opportunity for practicing physical therapists to expand their knowledge and skills in the basic and clinical sciences. In the early 1980s, the departments of Anatomy, Physiology and Physical Therapy began offering a Ph.D. program for the purpose of developing physical therapy faculty.

## **Mission**

The Department of Physical Therapy serves the people of the commonwealth of Virginia and the nation by providing educational programs related to physical therapy. The department provides an environment that encourages education through problem solving, free inquiry, professional behavior and scholarship. The department's primary focus is to prepare individuals for general physical therapy practice. These practitioners are educated to serve as an entry point into the health care system for consumers. Post-professional programs provide quality education leading to careers in teaching and research. The department also provides assistance and services to the community and engages in research and scholarly activities related to the practice of physical therapy.

## **Philosophy**

Physical therapy is an integral part of the health care system. Expanding knowledge in the basic and clinical sciences, and changes in the needs and mandates of society, continually place new demands on the physical therapy profession. The faculty of the Department of Physical Therapy is committed to providing educational programs responsive to expanding knowledge and the needs of society.

The primary principle directing the activities of the department is the faculty's commitment to optimal patient care through physical therapy education, research and practice. The faculty strongly believes that physical therapists must have a thorough understanding of the theoretical bases for treatment and skills in problem solving, evaluation and communication. The faculty also believes that physical therapists have a responsibility to develop skills for lifelong learning (e.g., the ability to find

information and to critically analyze that information).

The faculty also is committed to the development and sharing of new knowledge in the field of physical therapy through scholarship and research.

## Objectives

The objectives of the Department of Physical Therapy, in concert with the mission of the university and the School of Allied Health Professions, are to:

- provide an entry-level post-baccalaureate educational program for full-time students with diverse backgrounds and experiences,
- contribute to interdisciplinary post-professional doctoral programs which prepare physical therapists to contribute to the understanding and application of therapeutic procedures through basic and applied research and to teach both clinical and didactic physical therapy on all academic levels,
- provide an atmosphere which fosters critical thinking, intellectual curiosity and integrity, freedom of expression, personal growth and professional competence, and a commitment to learning for faculty and students,
- provide an environment which facilitates research and scholarship directed toward optimizing patient care, and
- provide services to the public and professional communities.

## Facilities

The educational facilities for the Department of Physical Therapy are located on the basement floor of A.D. Williams/West Hospital. These buildings, located on the northeast corner of 12th and Broad streets, house administrative and faculty offices, classrooms, physical therapy instructional, computer, and research laboratories, and student locker rooms. Classrooms in other buildings on the MCV Campus are used as needed.

Clinical education experiences for professional students are offered in physical therapy clinics throughout Virginia and the country.

## Professional Physical Therapy Program

The goal of this program is to provide a quality educational program that prepares students for entry into the profession of physical therapy. The program prepares students to evaluate and manage patients with physical

therapy problems effectively and in accordance with ethical principles. The program also provides students with strategies to continually define and meet their own educational needs in order to keep skills and knowledge current throughout their professional careers. Upon completion of the program, students are awarded a doctor of physical therapy degree. Refer to the professional programs section of this bulletin for additional information on the Professional Physical Therapy Program.

## Advanced graduate (post-professional) programs

The Department of Physical Therapy is committed to improving physical therapy services through advanced education. The department offers a master of science degree program for persons who have completed their physical therapy training. Doctoral programs are offered in cooperation with the departments of Anatomy, Neurobiology and Physiology.

## Admission requirements

Applications are encouraged from individuals who are practicing physical therapists. Applicants must have graduated from a physical therapy educational program approved by the American Physical Therapy Association. International students must have an equivalent level of education as determined by the Office of International Admissions. Individuals who are not physical therapists are not accepted into the advanced degree programs.

Additional admission requirements for graduate study in the Department of Physical Therapy are as follows:

1. a minimum GPA of 2.7 on a 4.0 scale for entry-level professional education,
2. satisfactory score on the general test of the GRE (taken no more than five years prior to admission),
3. three satisfactory letters of recommendation,
4. applicant's written statement of intent for pursuing graduate studies in a particular specialty track,
5. for M.S. program, one year clinical experience beyond internship, and
6. such additional requirements as may be established for individual specialty tracks.

International students also must score a 600 or above on the Test of English as a Foreign Language (TOEFL)(250 on computer based test).

## Financial assistance

Some teaching and research assistantships are available from the Department of Physical Therapy. These assistantships are competitive, with doctoral students given first priority. Part-time employment as a physical therapy clinician is available in Richmond and surrounding areas. Doctoral students receiving stipends must receive approval of outside employment.

VCU provides three types of student assistance: scholarships, loans, and work study. For information on these types of financial assistance, write to the Office of Financial Aid, Virginia Commonwealth University, MCV Campus, Richmond, VA 23298-0244.

Applications must be received by May 1 to be considered for the following fall semester. Students applying to the doctoral programs are encouraged to apply by April 15 in order to be considered for financial aid. Earlier application is encouraged as acceptance decisions begin in March.

## Advanced (Post-professional) Master of Science Program

The objective of the program is to train physical therapists in research, education and clinical problem solving skills so that they will be the clinical and academic researchers and teachers of the future.

## Program goals

At the completion of the program the student will:

- demonstrate an advanced ability to analyze the theoretical basis of measurement and treatment procedures,
- demonstrate skills in clinical or basic science research,
- demonstrate skills in teaching clinical examination and clinical therapeutic procedures, and
- demonstrate advanced clinical problem solving skills.

Specialization tracks allow the student to focus on a specific interest area. Currently specialization tracks are in the areas of neurological and musculoskeletal rehabilitation. Both tracks are designed to improve the knowledge base of the students in their chosen area of interest, as well as to help the student develop skills in critical thinking and problem solving.

Each student enrolls in core courses within the specialty area and elective courses that complement the core courses. In order to optimize the educational experience, the faculty have developed recommended

sequences of courses in each of the specialty tracks. Students may elect graduate courses offered by any university department, in addition to courses offered by the physical therapy department. Independent study with a faculty member is encouraged. Students may elect to participate in an optional clinical specialty practicum under the guidance of a clinician who possesses advanced skills in the student's area of interest. The completion of a thesis under the direction of a faculty adviser also is a requirement of each of the tracks. Students may study on either a part-time or full-time basis.

## General academic policies and regulations

To qualify for the master of science degree, students must meet the following requirements:

1. achieve an overall GPA of 3.0 on a 4.0 scale for all graduate course work,
2. complete a minimum of 25 course credit hours exclusive of thesis credits, and
3. satisfactorily complete the thesis and oral defense of the thesis.

## Specialization tracks

One of the following two specialty tracks is selected before admission to the program.

### Neurologic track

The curriculum provides the opportunity for physical therapists to critically analyze movement dysfunctions seen as a result of neurological pathologies using current theories of normal motor control and motor development. A framework is provided for the student to scrutinize commonly used neurologic physical therapy evaluation and treatment routines. Each student is required to assist in teaching one of the clinical courses in the professional program curriculum. The student may focus on neuropatho-kinesiology, motor development or aging. The student plans and conducts a research study in the area of motor control or motor development.

### Musculoskeletal track

The curriculum provides the physical therapist an opportunity to integrate facts and principles related to the musculoskeletal system. Issues related to the biological, biomechanical and clinical sciences are explored. Following completion of the pro-

gram, the student will be able to apply this knowledge to the examination and rehabilitation of individuals with musculoskeletal problems. The curriculum emphasizes the integration of didactic, research and clinical knowledge. In addition, the student must assist in teaching material related to the musculoskeletal system in the professional program curriculum. The student plans and conducts a research study relevant to the evaluation or treatment of patients with musculoskeletal problems.

Specific objectives and sequences of courses for each specialty track can be obtained by writing the Coordinator of Advanced Graduate Studies, Department of Physical Therapy, Virginia Commonwealth University, Richmond, VA 23298-0224.

## Doctor of philosophy programs

The departments of Anatomy and Neurobiology and Physiology of the School of Medicine, together with the Department of Physical Therapy of the School of Allied Health Professions offers Ph.D. programs in anatomy-physical therapy and physiology-physical therapy. The goals of the doctoral programs are to train students in research and educational skills in preparation for students to function as physical therapy faculty members. Application is made to either the Department of Anatomy and Neurobiology or the Department of Physiology. Acceptance into either of the programs requires approval by the admission committees of the cooperating departments.

Students in the Anatomy/Physical Therapy Doctoral Program take required courses within the departments of Anatomy and Neurobiology and Physical Therapy. Students in the Physiology/Physical Therapy Program take required courses within the departments of Physiology and Physical Therapy. (Other courses may be required by the student's dissertation committee.) In both programs, the student plans and conducts a research study generally under the direction of a faculty member of the Department of Physical Therapy; however, the dissertation adviser may be from either of the two primary departments. In addition, the student is required to assist in teaching three courses.

For additional information regarding the doctoral program, write the Coordinator, Advanced Graduate Studies, Department of Physical Therapy, Virginia Commonwealth University, Richmond, VA 23298-0224.

## Graduate courses in physical therapy (PHTY)

### PHTY 535 Growth and Motor Development

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Presents age-related differences and changes in physical structure and motor function across the human life span and current issues and trends in motor development theory and research.

### PHTY 601 Advanced Measurement Concepts

Semester course; 3 lecture hours. 3 credits. Investigates the principles of measurement theory as applied to clinical practice. Reviews basic principles guiding electronic instrumentation and electromyography. Examines the theoretical bases for the examination and treatment approaches used in orthopedic physical therapy or neurologic physical therapy.

### PHTY 602 Biomechanics

Semester course; 3 lecture hours. 3 credits. This course covers selected material related to the effects of forces upon normal and pathologic human form and movement. Students have the opportunity to develop an understanding of the basic principals of biomechanics and methods of measurement used in biomechanics so they can better understand the clinical, academic and research activities of their specific field of interest.

### PHTY 605 Foundations for Pathokinesiology

Semester course; 3-4 lecture hours. 3-4 credits. A study of the principles that form a foundation for understanding pathokinesiology and therapeutic kinesiology. Integration of principles of motor development, control and learning with emphasis on abnormal motor behavior and its remediation.

### PHTY 606 Therapeutic Kinesiology

Semester course; 1-3 lecture and 3 clinical hours. 2-4 credits. A study of motor behavior in both normal and pathological conditions. Reading and discussion of the basic literature of current neurologic approaches to therapeutic exercises and an integration of these concepts into a comprehensive model of human movement.

### PHTY 608 Advanced Musculoskeletal Sciences

Semester course; 3 lecture hours. 3 credits. Investigates advanced principles related to musculoskeletal anatomy and histology as they relate to physical therapy clinical practice. Examines the scientific basis for the assessment of muscle performance in patients. Examines recent literature related to the use of thermal and electrical modalities used on patients with problems of the musculoskeletal system.

### PHTY 611 Research Process

Semester course; 2 lecture hours. 2 credits. Readings, discussions and reports on the current status of professional literature and validation of clinical practice, clinical administration and professional education. A model for professional development, the role of research in the validation process and the basis of research design are presented non-mathematically. Required of all advanced master of science degree students unless excused by the faculty.

### PHTY 629 Special Topics in Physical Therapy

Semester course; 1 lecture hour. 1 credit. Provides an opportunity to pursue and present a topic of interest that is related to physical therapy evaluation and treatment.

**PHTY 690 Physical Therapy Graduate Seminar**

Semester course; 1 credit. Provides opportunity to develop knowledge and skills in evaluating published scientific literature related to physical therapy, developing researchable questions and orally presenting the material in a professionally appropriate manner.

**PHTY 691 Special Topics in Physical Therapy**

1-4 credits. Guided independent study of specific topics not discussed in courses or discussed in less detail in courses. Student's desired topic of study must be identified and approved prior to enrollment.

**PHTY 692 Clinical Specialty Seminar**

Semester course; 0.5-3 credits. Individual reports dealing in depth with the history, current status and problems in a given area of clinical specialization.

**PHTY 693 Clinical Specialty Practicum**

60 clock hours per credit. 1-9 credits. Concentrated clinical experience under the guidance of an approved preceptor.

**PHTY 798 Research in Physical Therapy**

1-15 credits. Research in preparation for the advanced master of science degree thesis or doctoral dissertation.

Note: Courses for the D.P.T. program can be found in the professional programs section of this bulletin.

## Department of Rehabilitation Counseling

Armstrong, Amy J., Assistant Professor

Ph.D. Virginia Commonwealth University  
Employment issues, supported employment, significant disabilities, distance education.

Berry, Paige E., Clinical Assistant Professor

M.S. Virginia Commonwealth University  
Services to the deaf, hard of hearing and deaf-blind, assistive technology, services to older adults.

Chandler, Anne L., Associate Professor

Ph.D. Michigan State University  
Vocational development, loss and bereavement, cognitive-behavioral counseling.

Lewis Jr., Allen N., Assistant Professor

Ph.D. Virginia Commonwealth University  
Disability issues with minority populations, rehabilitation leadership, evaluation of the effectiveness of disability services, diversity issues.

Mansouri, Mehdi, Clinical Assistant Professor

Ph.D., Virginia Commonwealth University  
Online education, instructional technology, information systems.

McMahon, Brian T., Professor

Ph.D. University of Wisconsin-Madison  
ADA implementation, traumatic brain injury, disability management.

Mulholland, Kathryn, Clinical Assistant Professor

Ph.D. United States International University  
Online education, instructional design, program development and disability management.

Reid, Christine, Associate Professor and Department Chair

Ph.D. Illinois Institute of Technology

Vocational evaluation, life care planning, deafness, case management.

Rosecrans, John A., Professor

Ph.D. University of Rhode Island  
Psychopharmacology of substance abuse, nicotine.

Wagner, Christopher C., Assistant Professor

Ph.D. Virginia Commonwealth University  
Substance abuse treatment and psychotherapy outcomes; interpersonal processes and theory; enhancing motivation for behavior change.

Wehman, Paul, Professor

Ph.D. University of Wisconsin  
Employment and significant disability, disability policy, rehabilitation research.

West, Steven L., Assistant Professor

Ph.D. Texas Tech University  
Substance abuse etiology and treatment, substance abuse services for undeserved populations, research methodology and statistics.

**Emeriti faculty**

Gandy, Gerald L.

Ph.D. University of South Carolina

Hardy, Richard E.

Ed.D. University of Maryland

Jarrell, George R.

Ph.D. University of South Carolina

Lassiter, Robert A.

Ph.D. University of North Carolina

Lawton, Marcia L.

Ph.D. Northwestern University

Rule, Warren R.

Ph.D. University of South Carolina

Wright, Keith C.

M.S. Marshall University

Founded in 1955, the Department of Rehabilitation Counseling serves as a national leader in the professional preparation of certified rehabilitation counselors who will exercise skill and competence on a high ethical level and with personal integrity. Accessible, innovative, research-based educational experiences that encourage the use of a critical and exploratory attitude are emphasized. The department seeks to perpetuate active programs of research and service, and maintain high levels of teaching competence. In partnership with students, community agencies and consumer and professional organizations, the department endeavors to advance the personal, social and economic independence of individuals with disabilities.

The Department of Rehabilitation Counseling is fully accredited by the Council on Rehabilitation Education (CORE), and is the only such program in the commonwealth of Virginia. The purpose of accreditation is to promote the effective delivery of rehabilitation services to people with disabilities by fostering ongoing review and improvements of reha-

bilitation education programs. CORE has developed a field-based research accreditation process that has gained widespread acceptance in the professional accreditation movement. With over 2,000 alumni, the department also enjoys solid relationships with many community organizations that serve as excellent sites for clinical training.

## Faculty adviser

Every student must have a faculty adviser to guide the student regarding course selection and scheduling, to supervise his/her research and to act as a channel of communication with the department, to other departments, and to the School of Graduate Studies. When the student receives notification of admission to the department, it is his/her responsibility to contact the faculty adviser to plan the program of study. Students consult with faculty advisers on a regular basis to ensure orderly progress through the entire program of study, choose clinical placement sites, select electives and plan their careers.

## M.S. in rehabilitation counseling degree requirements

Graduates from accredited Rehabilitation Counseling programs are typically trained in counseling theory and techniques; individual, group and environmental assessment; psychosocial and medical aspects of disability; human development; cultural diversity; principles of psychiatric rehabilitation, case management and rehabilitation planning; issues and ethics in rehabilitation service delivery; technological adaptation; vocational evaluation and work adjustment; career counseling; implementation of the Americans with Disabilities Act; job development; and placement.

The minimum degree requirement is 48 graduate credits including 33 credits of didactic course work, 100 hours of fieldwork, 600 hours of internship, six credits of electives, and a comprehensive examination.

The on-campus M.S. degree in rehabilitation counseling has been available since 1955. The program consists of 48 graduate credits. Currently, 90 full- and part-time graduate students are enrolled on campus. In addition, the same degree has been made available on a distance-learning basis since July 1999. Ten required courses and the two electives have been available online according to a predetermined schedule. Two clinical counseling courses as well as the two electives also have been available on-site in a

compressed schedule (typically one-to-two weeks) at various locations. Alternately, up to 12 hours may be taken at an accredited graduate counseling program and accepted as transfer credit with prior approval. Approved internships with appropriate faculty and agency supervision are negotiated by the department, student and the local community organization.

### Full-time program of study (example only)

	credits
<b>Semester I</b>	
RHAB 525 Introduction to Rehabilitation	3
RHAB 611 Counseling Theories in Rehabilitation	3
RHAB 625 Research in Rehabilitation	3
RHAB 640 Medical and Psychological Aspects of Disabilities in Rehabilitation	3
	12
<b>Semester II</b>	
RHAB 612 Group Counseling Theories and Techniques in Rehabilitation	3
RHAB 521 Foundations of Substance Abuse Rehabilitation	3
RHAB 623 Career Counseling and Job Placement in Rehabilitation	3
RHAB 642 Psychiatric Information for Counselors in Rehabilitation	3
	12
<b>Summer</b>	
RHAB 691 Counseling Techniques in Rehabilitation	3
	3
<b>Semester III</b>	
RHAB 633 Case Management in Rehabilitation	3
RHAB 624 Appraisal and Evaluation in Rehabilitation	3
RHAB 654 Multicultural Counseling Elective	3
	12
<b>Semester IV</b>	
Elective	3
RHAB 695 or RHAB 696 Supervised Clinical Practice (includes 600 hours of internship and CRC/comprehensive examination)	6
	9

### Comprehensive examination

All students are required to complete the Certified Rehabilitation Counselor (CRC) Examination in conjunction with RHAB 695 or 696.

### Specializations

In collaboration with the faculty adviser, students may wish to design a program of study around a specific area of interest. Specializations in substance abuse, mental health, physical/sensory disabilities and gerontology are the most common in the department. Careful planning will typically allow students to meet the educational requirements for several additional credentials beyond the CRC; e.g., National Certified Counselor, Certified Mental Health Counselor, Certified Case Manager, Certified Vocational Evaluator, Certified Disability Management Specialist, Rehabilitation Provider (Virginia), or Master Addictions Counselor. Specialization is achieved through:

- customization of assignments in required courses such as RHAB 640, RHAB 633, RHAB 691 or RHAB 654. These courses often involve assignments that require the student to specify a population of interest which the student is free to select,
- required courses specific to your population of interest; e.g., RHAB 521,
- careful selection of elective course work; e.g., RHAB 522, RHAB 523, RHAB 533,
- careful selection of a 600-hour internship site and supervisor (RHAB 695-696), and
- additional elective course work beyond the required 48 credits.

### Foundations of clinical training

According to CORE Standards and the requirements of the department, students must have supervised rehabilitation counseling fieldwork and internship experiences that include:

- a minimum of 100 clock hours of fieldwork experience (as part of RHAB 691),
- a minimum of 600 clock hours of internship experience in rehabilitation settings (as part of RHAB 695-696),
- written expectations and procedures for these experiences which are distributed to students and agency supervisors,
- the following activities: orientation to program components, policies and procedures; introduction to staff and their role and function; identification of the expectations for students; observation of all aspects of the delivery of rehabilitation counseling services; work assignments, performing the tasks required of an employed rehabilitation

counselor in a rehabilitation setting from intake to discharge and/or placement; reporting, including all required academic reports as well as logs, weekly progress reviews, and summaries of activities, and

- evaluation of student performance, including self-evaluation by the student, the agency supervisor and the faculty supervisor.

Internship experiences shall be carried out under the regularly scheduled supervision of a Certified Rehabilitation Counselor (CRC). The quality of supervision shall be maintained by involvement of VCU faculty in terms of in-service training, consultation, information and the provision of professional development resources to agency supervisors.

### Colloquia and grand rounds

Periodically, special colloquia, grand rounds, workshops and institutes are offered for department students and agency personnel. Students will receive reasonable notice of these events, and some may be required for specific classes. Students should make every effort to attend because these experiences significantly enrich the curriculum.

### Time limit for completion of degree

All degree requirements must be met within seven years from the date of initial enrollment.

### Certificate in professional counseling (post-master's and graduate)

The advanced certificate program in professional counseling is designed for persons who hold the master of science or master of arts degree in counseling from VCU or other institutions. The intent is to assist students in meeting the educational requirements for the Licensed Professional Counselor, the Licensed Substance Abuse Practitioner and the Certified Substance Abuse Counselor credentials in Virginia and other states. The certificate program also may be pursued to fulfill pre-service or continuing education requirements for various national certifications, such as National Certified Counselor or Certified Rehabilitation Counselor. Applicants to the program designate a preferred specialization based upon interest and need. Specialization requirements may exceed the minimum number of required credits for the certificate program as a whole.

- Specific goals include but are not limited to:
1. The encouragement of advanced graduate education in counseling.

2. The facilitation of the professional counselor's career development efforts and goals.
3. The facilitation of the acquisition or maintenance of professional state licenses or national certificates.
4. The expansion of the student's awareness and expertise in specialized counselor roles and functions.

### Admission requirements

The applicant must:

1. Have completed a master's degree in counseling.
2. Submit an application to the VCU School of Graduate Studies, including a statement of goals and three letters of reference.
3. Complete a personal interview with a faculty member from the Department of Rehabilitation Counseling.

While not a requirement for admission, applicants who are seeking licensure or certification in the commonwealth of Virginia are strongly encouraged to have their graduate transcripts evaluated by the Virginia Board of Counseling for official verification of holding a degree in counseling. The board also will determine the number of hours completed toward satisfying the 60 graduate credit hours requirement.

### Graduation requirements

To qualify for the advanced certificate in professional counseling, the following requirements must be satisfied:

1. With an academic adviser, design and complete an approved course of study that leads to the completion of the educational requirements for licensure or certification as a professional counselor.
2. Complete a minimum of 15 graduate hours of course work in professional counseling with an overall GPA of 3.0 or higher.
3. Complete six of 15 hours of graduate course work in advanced counseling skills courses.
4. The 15 credits must be nonduplicative of previous graduate work completed at VCU or other institutions.
5. Transfer credits are not accepted.

### Concentration areas

Two concentration areas are available in the certificate program as follows:

- Professional counseling, which requires a minimum of six credits in advanced counseling skills course work in the RHAB 613-614 series consisting of

skills development in cognitive/behavioral counseling, motivational enhancement therapy, Gestalt therapy and others.

- Substance abuse counseling, which requires the completion of RHAB 521 Foundations of Substance Abuse Rehabilitation, RHAB 522 Clinical Evaluation, Assessment, and Treatment Planning in Substance Abuse Rehabilitation and RHAB 523 Contemporary Issues in Substance Abuse Treatment and Recovery. For persons who have not completed a practicum experience, RHAB 695 Supervised Clinical Experience is required.

Advanced supervised clinical practice within the above concentrations also can be arranged for internship and practicum experience in the student's area of specialization.

### Additional information

The program and all RHAB courses are taught from a rehabilitation counseling perspective. While course work from other departments such as Psychology, Social Work and Counselor Education may be included in the course of study, emphasis is placed upon a rehabilitation philosophical approach.

It also is important that applicants understand that no guarantee can be provided by VCU that a particular licensing or certification body will accept the courses listed in fulfillment of certificate requirements. Credentialing bodies are numerous, their requirements are in flux and they are not always consistently applied to individual applicants. In advising students, the faculty advisers make good faith efforts to interpret educational requirements with students. However, the student is ultimately responsible for verifying the appropriateness of any course with the specific credentialing body involved.

### To apply

Applicants for admission to the program must complete forms provided by the School of Graduate Studies indicating "Certificate in Professional Counseling" as the curriculum and designate a preferred specialization or interest area. Detailed information on the curriculum is available from:

Virginia Commonwealth University  
Department of Rehabilitation Counseling  
McGuire Hall  
1112 E. Clay St.  
P.O. Box 980330  
Richmond, VA 23298-0330  
(804) 828-1132  
Fax: (804) 828-1321

Completed applications must be addressed to:

Virginia Commonwealth University  
School of Graduate Studies  
1001 Grove Ave.  
P.O. Box 843051  
Richmond, VA 23284-3051

### M.S. degree in rehabilitation counseling and certificate in aging studies

The Department of Rehabilitation Counseling, in cooperation with the Department of Gerontology, provides its degree-seeking students with the opportunity to earn the certificate in aging studies while concurrently completing the requirements for the M.S. degree in rehabilitation counseling. Students must meet admission requirements for both the rehabilitation degree and the gerontology certificate program, and admission into one is independent of the other. A total of 50 carefully prescribed graduate credits are necessary to complete requirements for both credentials. Most important, RHAB 696 Supervised Clinical Practice must be completed in a rehabilitation setting related to aging. Additional information, including specific program of study for the counseling program, may be obtained in the Department of Rehabilitation Counseling. Information on the curriculum presented by the Department of Gerontology can be obtained by contacting the chair of the Department of Gerontology.

### Admission deadlines and requirements

Both full- and part-time students are valued and are welcome to apply. Applications are reviewed on an ongoing basis. To be considered, all pertinent materials must be received in the department by Aug. 1 (for fall), Dec. 1 (for spring) or May 1 (for summer). Admission requirements include:

- an undergraduate GPA of 2.7 on a 4.0 scale; or 2.7 in the last 60 semester hour credits (Based upon transcripts provided to the School of Graduate Studies),
- three positive letters of reference from professors or employers (on reference forms provided by the School of Graduate Studies),
- satisfactory performance on either the GRE (804) 828-6916 or the MAT (804) 828-1193,



- a relevant and clear statement of goals for graduate study and career,
- statement of previous work or volunteer experience, and
- a personal interview with a faculty member may be required.

A complete set of application materials is available from the department office at (804) 828-1132.

## Transfer credit

A maximum of 13 hours of graduate credit may be transferred from another VCU graduate program or outside institution if not applied previously to another degree. Transfer credits must carry a grade of "B" or higher from an accredited institution. Acceptance of transfer credit is made at the level of the department chair and dean of the School of Allied Health Professions. Transfer credits earned as a nondegree-seeking graduate student are limited to six semester hours of credit. Credits earned as deficiency hours or to demonstrate the ability to compete at the graduate level, though transferable, may not be applied to the 48 credit program of study.

## Graduate courses in rehabilitation counseling (RHAB)

### RHAB 502 American Sign Language I

Semester course; 3 credits. Introduces the rules and grammatical structure of ASL with a focus on grammar and vocabulary to increase the learner's expressive and receptive understanding of the language. Provides an introduction to Deaf culture and crosscultural interactions, and to tactile and close-vision communication techniques used by individuals who are deaf-blind.

### RHAB 503 American Sign Language II

Semester course; 3 credits. Provides continued study of the grammatical structure of ASL; introduction of additional vocabulary with emphasis on expressive and receptive competence; continued study of the tactile and close-vision communication techniques used by individuals who are deaf-blind; and continued study of the Deaf culture.

### RHAB 521 Foundations of Substance Abuse Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of substance abuse and dependence as multifactorial disorders (including biological, psychological, behavioral and sociocultural elements.) Exposes students to an overview of the various psychoactive substances, multiple theoretical models of substance abuse and dependence, and resulting medical, social and legal consequences. Focuses on substance abuse prevention, diagnosis, intervention, treatment and support systems.

### RHAB 522 Clinical Evaluation, Assessment, and Treatment Planning in Substance Abuse Rehabilitation

Semester course; 3 lecture hours. 3 credits. Prerequisite: RHAB 521. Stresses development of professional competencies. Focuses on systematic approach to screening and on-going assessment; diagnostic criteria for dependence and abuse; testing and interviewing; co-morbidity; collaborative approaches to individualized clinical treatment planning; awareness of treatment resources.

### RHAB 523 Contemporary Issues in Substance Abuse Treatment and Recovery

Semester course; 3 lecture hours. 3 credits. Prerequisite: RHAB 521. Examines current issues and research in the field. Includes topics such as denial, social isolation, intervention; lifelong nature of recovery, support needs, relapse prevention; legal, political and ethical issues; special populations (e.g., physical disability); poly-drug abuse; perinatal addiction; program administration; professional readiness.

### RHAB 525 Introduction to Rehabilitation Counseling

Semester course; 3 lecture hours. 3 credits. Provides an overview of history, philosophy, legislation, organizational structure and trends in the rehabilitation profession. Focuses on attitudinal, social and environmental barriers to the inclusion of people with disabilities; professional identity, roles and functions; CRC Code of Ethics; CRC Standards of Practice; and career options.

### RHAB 533 Directed Readings in Rehabilitation

Semester course; 1-3 credits. May be repeated to a maximum of six credits. Provides intensive study in one or more topical areas of rehabilitation through directed readings under the supervision of a faculty member.

### RHAB 611 Counseling Theories in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the major theoretical approaches to individual counseling with rehabilitation clients. Focuses on student development of an initial theoretical orientation that will guide their counseling practice.

### RHAB 612 Group Counseling Theories and Techniques in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides theories or groups, group structure and group dynamics, and group counseling strategies. Focuses on process observation skills. Examines applications to groups of a variety of stakeholders in rehabilitation counseling and case management.

### RHAB 613 Advanced Rehabilitation Counseling Seminar

3-9 lecture hours. 3-9 credits. Prerequisites: RHAB 611 and 612 or permission of instructor. This course is designed to provide an opportunity for students to undertake a more in-depth study of selected approaches to individual and/or group counseling of rehabilitation clients. Principles and techniques relevant to vocational, educational, and personal adjustment problems related to severe and multiple disabilities will be systematically explored and studied. Audio visual tape experience will be offered.

### RHAB 614 Counseling, Death and Loss

3 lecture hours. 3 credits. Prerequisites: RHAB 611 or permission of instructor. Explores the psychosocial

processes of adaptation to severe losses such as those occasioned by the onset of disability, death and developmental life changes. Emphasizes the knowledge and skills required by rehabilitation counselors in dealing with losses experienced by their clients.

### RHAB 623 Career Counseling and Job Placement in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of major theories of career development with emphasis on theories relevant to rehabilitation practice. Explores occupational information and job matching systems; career counseling techniques; and major job placement approaches and techniques with emphasis on demand-side job placement.

### RHAB 624 Appraisal and Evaluation in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Examines principles of measurement, assessment and diagnosis in rehabilitation; test selection, administration and interpretation; accommodating individuals with disabilities in the testing process. Includes an overview of the major domains in assessment.

### RHAB 625 Research in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Examines basic principles rehabilitation research and program evaluation, including an emphasis on the critical review of published research for use in rehabilitation practice. Focuses on students understanding of the application of research and program evaluation tools to enhance the quality of rehabilitation services delivered.

### RHAB 633 Case Management in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Prerequisites: 18 completed credits in core courses. Explores benefit systems, ethics, goal development, rehabilitation planning, coordination and delivery of rehabilitation services, community resources and documentation. Focuses on critical analyses of representative disability-specific case studies; e.g., substance abuse.

### RHAB 640 Medical and Psychosocial Aspects of Disabilities in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of the major disabilities encountered by rehabilitation counselors. Focuses on functional limitations and the process of psychological adjustment.

### RHAB 642 Psychiatric Information for Rehabilitation Counselors

Semester course; 3 lecture hours. 3 credits. Examines the major mental disorders, and their etiology, definition, diagnosis and classification. Reviews the prevailing multiaxial classification systems and diagnostic processes, procedures and nomenclatures currently used in clinical practice. Provides an overview of application of psychotropic medication and other treatment approaches. Includes diagnostic interviewing, tests of psychopathology and mental health treatment planning.

### RHAB 644 Alcohol and Human Behavior

3 credits. Prerequisites: RHAB 521, 522, 523, and 695 or permission of instructor. Understanding the significance of behavior as a tool in diagnosing, treating and/or referring the addict; appreciation of particular cues to observe the predominant behavior associated with living problems and reflected by the alcohol or drug abuser.

**RHAB 654 Multicultural Counseling in Rehabilitation**

Semester course; 3 lecture hours. 3 credits. Provides an overview of multicultural counseling theories and techniques. Provides an understanding of how human development, family, gender, race and ethnicity impact upon the process of adjustment to disability.

**RHAB 681-689 Institutes and Workshops in Rehabilitation**

Orientation institutes and other short-term training programs are offered for rehabilitation counselors newly recruited to the rehabilitation field and for the further professional development of those already employed. Content will vary according to the aims of the institutes or workshops. Length of time and number of credits are announced prior to each institute or workshop.

**RHAB 691 Counseling Techniques in Rehabilitation**

Semester course; requires 50 hours counseling practice and 50 hours exposure to rehabilitation agencies and practice. 3 credits. Prerequisites: RHAB 611. Provides experience and practice in the basic counseling skills related to the helping process. Examines the variety of clinical settings available for professional preparation. Provides the necessary level of skill development for students to participate in internship.

**RHAB 693 Introduction to Field Experiences for Rehabilitation Counselors**

3 credits. This course provides for concurrent field experience and is designed for students who have no training or experience in interviewing and counseling in rehabilitation settings.

**RHAB 694 Job Placement in Rehabilitation**

Semester course; 3 lecture hours. 3 credits. Explores occupational information, job matching systems and job placement approaches. Focuses on demand-side job development, job seeking skills training, supported employment, transitional work and placement techniques including job analyses, ADA implementation and labor market surveys.

**RHAB 695 Supervised Clinical Practice in Substance Abuse Rehabilitation**

Semester course; 1-6 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of nine credits. Prerequisites: Completion of 24 graduate credits including RHAB 691. Requires completion of Certified Rehabilitation Counselor examination and a total of six credits for degree completion. Emphasizes mastery of substance abuse setting specific roles and functions of the professional rehabilitation counselor. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.

**RHAB 696 Supervised Clinical Practice in Rehabilitation Counseling**

Semester course; 1-6 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of nine credits. Prerequisites: Completion of 24 graduate credits including RHAB 691. Requires completion of Certified Rehabilitation Counselor examination and a total of six credits for degree completion. Emphasizes mastery of setting-specific roles and functions of the professional rehabilitation counselor. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.

**RHAB 697 Supervised Clinical Practice in Counseling**

Semester course; 1-6 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of nine credits. Prerequisite: Admission into advanced certificate in professional counseling program. Emphasizes advanced development of counseling skills pursuant to licensure or other post-master's training needs. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.

# School of the Arts

## Graduate Programs

The School of the Arts of Virginia Commonwealth University had, as its beginning, a sculpture course offered in 1926. In 1928, a one-faculty art department was formed under the direction of Miss Theresa Pollak and since that date, has become one of the largest art schools in the United States, achieving national recognition through its quality programs in the visual and performing arts.

In 1969, the Department of Dramatic Art and Speech and the School of Music, formerly independent units within VCU, were combined with the visual arts departments of the School of Art to form the present School of the Arts.

The School of the Arts is accredited by the National Association of Schools of Art and Design, the National Association of Schools of Music and the National Association of Schools of Theatre, and offers a rich and unique concept of graduate study for students in the visual and performing arts. It is one of the few state-aided professional art schools in the nation with a professional curriculum within a combined academic and professional environment. Located within an urban complex of higher education, students are provided not only with the advantages of comprehensive university facilities, but also with cultural opportunities offered in the greater Richmond community, including activities generated by over 50 museums and galleries and performances by nationally and internationally acclaimed arts organizations.

Graduate students study with faculty who are dedicated educators and who also are committed professional artists, designers and scholars. Each year, both faculty and students of the School of the Arts are honored with prestigious regional and national awards which attest to the school's high quality of instruction and commitment to excellence.

The graduate program in the School of the Arts offers advanced degrees in the following areas of study:

### Doctor of Philosophy

art history

### Master of arts

architectural history  
historical studies  
museum studies

### Master of Art Education

art education

### Master of Fine Arts in Design

film  
interior environments  
photography  
visual communications

### Master of Fine Arts in Fine Arts

ceramics  
fibers  
furniture design  
glass  
jewelry/metal  
painting  
printmaking  
sculpture

**325 N. Harrison St. • P.O. Box 842519**  
**Richmond, VA 23284-2519**  
**(804) 828-2787 • Fax (804) 828-6469**  
**<http://www.vcu.edu/artweb>**

### Richard E. Toscan

Dean  
B.A., M.A., Ph.D.

### Joseph H. Seipel

Senior Associate Dean for Academic Affairs and  
Director of Graduate Studies  
B.S., M.F.A.

### Christopher Burnside

Associate Dean for Student Affairs  
B.S., M.F.A.

### Paul E. Petrie

Associate Dean for VCU-Qatar  
B.I.D., M.F.A.

### Susan K. Roth

Associate Dean for Academic Affairs  
B.F.A., M.A.

### Nancy M. Scott

Associate Dean for Academic Administration  
B.F.A., M.Ed.

### W. Camden Whitehead

Assistant Dean for Admissions  
M.Arch.

### Master of Fine Arts in Theatre

costume design  
scene design  
theatre pedagogy  
acting  
directing  
dramatic literature  
physical acting/stage combat  
voice and speech

### Master of Music

composition  
music education  
performance, including conducting

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### Graduate student status

The School of the Arts recognizes two categories of graduate students. The first is comprised of those who are accepted either provisionally or as students with full standing into the graduate degree programs of the

various departmental areas. These students may matriculate full time or part time except for the residence limitation discussed elsewhere in this bulletin.

The second category is that of the non-degree-seeking graduate student, or “special” graduate student. There are two types of “special” graduate students. The first is the student whose expectation of eventual acceptance into a graduate program is high and who wants to begin graduate work while application materials are being completed and processed.

Holders of the baccalaureate degree from recognized institutions may enroll in graduate courses as nondegree-seeking special graduate students, but such courses are not applicable toward a graduate degree from this institution unless the student is accepted into a graduate degree program prior to the conclusion of the semester in which the student registered as a nondegree-seeking graduate student.

A nondegree-seeking student who is later admitted as a degree-seeking student will not be allowed to apply toward a degree more than six credits earned as a nondegree-seeking student.

The second type of nondegree-seeking graduate student is the student who holds a baccalaureate degree, who wishes to take graduate courses for personal enrichment, and who does not intend to work toward a graduate degree. There is no limit to the number of credits that students in this category may take, as long as the academic performance is credible.

**All nondegree-seeking (“special”) graduate students must have written permission from the chair of the appropriate department in order to enroll in classes.**

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## Admission procedures

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

General information about admission to graduate study and application procedures can be found in the Graduate Studies at VCU chapter of this bulletin.

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## Admission requirements

For Ph.D. degree, see Ph.D. in Art History section.

For all other degrees (M.A., M.A.E., M.F.A. and M.M.):

- applicants should hold the baccalaureate degree from an accredited institution
- it is expected that applicants will have a 3.0 (“B”) average on the last 60 semester hours of undergraduate work

The prospective student should consult the appropriate section of this bulletin for additional admission requirements for a particular degree program. Such requirements include:

- the Graduate Record Examination (GRE) for applicants to art history
- an audition and examination for applicants for music, as described in the program description for the M.M. degree
- an audition or presentation of portfolio, as well as a personal interview, for applicants for the M.F.A. in theatre
- a portfolio review for all applicants to the visual arts M.F.A. degrees (a personal interview is encouraged)

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## Advising

All students accepted into advanced degree programs must make an appointment with the chair of the department prior to registration for their first semester of course work. Normally, the student’s initial adviser will be the chair of the department; but students may be assigned an adviser more directly related to their areas of concentration.

Students are encouraged also to consult faculty members outside their major area and arrange with the appropriate departmental chair to use facilities and equipment available in other departments.

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## Registration

Graduate art students are urged to plan their schedules and register during advance registration. Registration materials for students accepted into advanced degree programs are available in the department during the advance registration and registration periods. The advantage of advance registration is that of securing places in classes before they are closed and of obtaining proper counsel from advisers. All graduate students must see their assigned advisers for schedule planning and signature approval. New nondegree-seeking graduate students, or those contemplating registration as such, must secure written permission to register from the departmental chair.

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## Continuous enrollment policy for graduate students

Graduate students in the School of the Arts must observe the University Continuous Enrollment Policy as explained in the Graduate Studies at VCU chapter of this bulletin.

Candidates for all advanced degree programs, after completing all formal course work, must register for at least one semester hour of credit each semester, except summer, until the culminating graduate project (dissertation, thesis, creative project, exhibition, recital, etc.) is completed and the student is ready to graduate. Also, if candidates intend to graduate in August, they must be enrolled for at least one semester hour in the summer session.

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## Special charges

All degree-seeking graduate students are charged an art comprehensive fee. The art comprehensive fee is not charged to students who are registered only in course work to complete a dissertation/thesis/creative project or who are enrolled in order to satisfy the one-credit requirement for continuous enrollment. Nondegree-seeking graduate students enrolled in any of the courses which require an additional outlay for materials will be billed for those individual fees by the Student Accounting Department.

In addition to the comprehensive fee for all majors in the School of the Arts, all students registering for private music lessons pay an applied music fee.

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## Financial support

The School of the Arts awards a limited number of graduate assistantships and scholarships to full-time students. Applicants seeking financial support must submit completed applications for scholarships and/or graduate teaching assistantships directly to the chair of the student’s department by Feb. 15 for fall admission and Oct. 15 for spring admission. Application forms are available through the School of the Arts, Office of Graduate Studies, Virginia Commonwealth University, Pollak Building, Room 201, Richmond, VA 23284-2519.

## Transfer credit

A maximum of nine graduate credits may be transferred from other accredited institutions and applied to any of the graduate degree programs in the School of the Arts upon approval of the department chair.

## Advanced degree candidacy

Students seeking an advanced degree in all programs must apply for advanced degree candidacy. Those seeking the M.A.E. and the M.M. must submit the application during or after the completion of the first nine semester credits of graduate work and prior to the completion of 18 semester credits. Students pursuing the M.F.A. degree must submit the application during or after the completion of the first 15 semester credits of graduate work and prior to the completion of 30 semester credits. Applications for candidacy are available in the departmental offices and the Office of Graduate Studies, School of the Arts.

Admission to a degree program does not constitute candidacy, and admission to degree candidacy is not an automatic process. Departments carefully review applicants for candidacy on such basis as examination or review of creative work or performance. Upon certification by the department that the applicant has met all departmental expectations, including the minimum 3.0 GPA and is adequately prepared to continue pursuing the degree program, the School of the Arts will admit the applicant to degree candidacy.

Students who are found to be inadequately prepared to continue their graduate programs, but who demonstrate the potential to ultimately fulfill degree requirements will be advised as to what additional work will be needed in order to meet departmental expectations. Candidacy, in such instances, will be postponed until departmental expectations are satisfied; postponement of candidacy may result in termination of financial assistance. Students whose academic or creative work demonstrate no likelihood of successful completion of a graduate program will be denied candidacy by the School of the Arts.

## School of the Arts residency requirements

Candidates for the master of fine arts degree in the fine arts and theatre must complete a minimum of one-third of their degree program semester-hour credits within one calendar year.

Candidates for all master's degrees in the School of the Arts have five years plus two possible extensions of one year each to complete all degree requirements. The above limitations apply to both full-time and part-time students. A petition for an extension is initiated with the academic or thesis adviser.

## Advanced degree requirements

- Students must achieve candidacy (with the exception of art history students).
- Students must complete all formal course work.
- Students must maintain at least a 3.0 cumulative GPA. No grade below "B" will count toward graduation for students in the art history and the visual communications degree programs. For all students in the theatre program, any grade below "B" in any course will result in termination from the degree program. Students in all programs in the department of music must not have more than six hours or 20 percent of semester hours attempted — whichever is greater — with a grade of "C." For all other degree programs in the School of the Arts, no grade below "B" is acceptable for any course within the student's major department, and a grade below "B" in a course in the student's major department will result in termination from the degree program.
- All students must complete the culminating project (dissertation, thesis, final examination, creative project, recital, etc.) as outlined in departmental guidelines. The thesis, or other written documentation related to the culminating project, must be done in a form that can be retained by the university and in accordance with departmental guidelines. Students preparing a thesis must use the guidelines set forth in the Preparation of Thesis, available in departmental offices or the Office of Graduate Studies, School of the Arts.

## School of the Arts Library

The School of the Arts Library, located in the Pollak Building, has a collection of more than 450,000 slides and a working collection of current art publications and magazines.

VCU is a short distance from Washington, D.C., Baltimore, Philadelphia and New York City and the museums, libraries and research facilities in those urban areas.

## Graduate courses in art (ARTS)

### ARTS 592, 692 Individual Projects/Fieldwork

Semester courses; 1-6 credits. By appointment with director of graduate studies after approval by department chair. (Obtain individual research project form from the dean's office prior to enrollment.) Individual work for graduate students.

### ARTS 601-602 Seminar in Art

Continuous course; 3-3 credits. Discussion and research in the visual arts providing experience and involvement in the various studio areas for students not concentrating in these areas.

### ARTS 690 Methods of Art Research

Semester course; 2 credits. Review of selected research methods relevant to the composition of a thesis in the student's master's degree area. Preparation of a proto-thesis concludes course work.

### ARTS 705, 706 Research in the Arts

Semester courses; 3, 6 credits. By appointment with director of graduate studies after approval by department chair. (Obtain individual research project form from the dean's office prior to enrollment.) Individual research for graduate students.

## Department of Art Education

Basseches, K.B., Assistant Professor  
Ph.D. University of Maryland  
Art education.

Bleick, Charles F., Associate Professor and  
Department Chair  
Ph.D. University of North Texas  
Curriculum, painting.

Burton, David, Associate Professor  
Ph.D. Pennsylvania State University  
Philosophy, design.

Carpenter, B. Stephen, Associate Professor  
Ph.D. Pennsylvania State University  
Art criticism, ceramics.

The Master of Art Education Program attempts to expand and further refine each M.A.E. student's ability, knowledge and attitudes in order to provide the profession with more effective art teachers, coordinators, supervisors and other educational specialists in the arts.

## Program description

The M.A.E. Program is structured on an individualized basis rather than on a prescribed program of graduate studies. To benefit from the program's flexibility, the M.A.E. student is assisted by a faculty adviser in determining his or her own educational needs and professional goals. With the assistance of the adviser, the M.A.E. student determines a viable structure for the content and sequence of a program of graduate studies.

Such a program can utilize the collective expertise of the art education faculty as well as appropriate community resources. Graduate course work, therefore, could include both on-campus and off-campus involvement.

Opportunities for personal growth through the M.A.E. Program also include the rich resources of other graduate departments in the university in the visual and performing arts, education (including supervision, administration and special areas), the natural and social sciences and the humanities. Alternative approaches to traditional thesis methods also are encouraged within the program.

## Admission requirements – M.A.E.

### Undergraduate preparation

In addition to the School of the Arts admission requirements, applicants in art education must have completed a minimum of 36 semester hour credits in studio art at the undergraduate level. It is desirable for applicants to have had at least two years of teaching experience prior to beginning graduate studies.

### Portfolio

Applicants must submit evidence of creative or professional involvement in the format of their choice. Included should be material such as slides of representative work, description of professional activities, articles published, curriculum and program material developed and other documentation of activities with artists, teachers and children.

## Degree requirements – M.A.E.

Program pattern	credits
Art education electives	12
Approved electives	15
Issues and methods of inquiry	3
Thesis or project option or nonthesis option	6
	<hr/> 36

## Thesis or project option

A thesis or project option may develop from graduate course work or professional involvement. Projects are those endeavors of thesis proportion that do not fit the traditional thesis format. A thesis or project may be explored by descriptive research, historical research, empirical/statistical research, design of learning packages, philosophical study, curriculum development or action research.

## Non-thesis option

In lieu of the thesis, students may elect to complete six credit hours of graduate course work in the Department of Art Education. The selection of these six credits is subject to the approval of the student's adviser. In addition, the student must pass successfully a written and oral examination at the conclusion of all course work. The examination will pertain to the course work, to contemporary issues in the field and to the student's particular area of expertise.

## Graduate courses in art education (ARTE)

### ARTE 501-502 Concepts in Art Education

Continuous course; 1 seminar and 4 studio hours. 3-3 credits. A sequence of studies organized around six major components: communications, expressive media, conceptual expression, teaching strategies, teacher-affective attributes and self-managing abilities.

### ARTE 508 Two-dimensional Art Experiences

Semester course; 2 seminar and 3 studio hours. 3 credits. Not offered for credit for studio art majors. The course explores the media, techniques and concepts of drawing, painting and printmaking.

### ARTE 509 Three-dimensional Art Experiences

Semester course; 2 seminar and 3 studio hours. 3 credits. Not offered for credit for studio art majors. Exploration of sculptural concepts with three-dimensional materials such as wood, metal, clay, fiber, plaster, plastic and glass.

### ARTE 520 Teaching Concepts Through the Arts

Semester course; 1 lecture, 1 seminar, and 3 studio hours. 3 credits. Open to all graduate students. Students will investigate and compare traditional and contemporary patterns of expression, develop experiential techniques for teaching concepts and participate in a series of activities that reveal relationships among the arts and other subject areas. Seminars will include guests from the visual, performing and literary arts.

### ARTE 550 Art for the Exceptional Learner

Semester course; 2 lecture and 3 laboratory hours. 3 credits. A study of exceptional learners including handicapped, gifted, talented, aged and others, and their participation in and appreciation for the visual arts. Courses may include practicum and field experiences.

### ARTE 553 Art and Perceptual Communication

Semester course; 3 lecture hours. 3 credits. Explores art and perception as a means of effectively communicating through the senses. Emphasizes the analysis of the principles of art and design that affect the perception of art, advertising and other media. Investigates light, color, perception, illusions and other related topics.

### ARTE 591 Topics in Art Education

Semester course; variable credits from 1-3. May be repeated for a maximum of nine credits with different content. The course will explore selected topics of current interests or needs relative to art education. See Schedule of Classes for specific topic to be offered each semester.

### ARTE 600 Seminar: Issues in Art Education

Semester course; 3-6 lecture hours. 3-6 credits. The course investigates contemporary issues and identifies problems in art education. Students prepare oral and written reports that explore new directions and discuss the implications for teachers and art programs.

### ARTE 601 Art for Elementary Classroom Teachers

Semester course; 2 lecture and 2 studio hours. 3 credits. An inquiry into the nature of art and its importance in the elementary curriculum. Through personal experiences with art concepts and media, students learn about themes, form and expression and develop a broader understanding of the value of art for children.

### ARTE 611, 612 Literature in Art Education

Semester courses; 3 lecture hours. 3, 3 credits. Review, analysis and assessment of significant historical and contemporary writings in art education and related fields.

### ARTE 652 Art Supervision and Administration

Semester course; 3 lecture hours. 3 credits. Exploration of the duties and responsibilities of the public school art supervisor and administrative positions in art education within various organizations or institutions.

### ARTE 665 Curriculum Development and Evaluation

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. A review of curriculum development including: needs assessment, determination of goals and objectives, curriculum writing, evaluation, and feedback processes. Theoretical approaches in the visual arts will be studied and curriculum models designed, developed and analyzed.

### ARTE 670 Technology in Art Education

Semester course; 2 lecture and 3 studio hours. 3 credits. The students examine diverse aspects of new technologies in relation to art programs. These aspects include media and computer-assisted learning, and applications of computer graphics and other technology to artistic expression.

### ARTE 680 Teaching Laboratory

Semester course; 3 lecture hours. 3 credits. Observations and experimental teaching experiences with children in art. Group discussions and evaluation of ideas, objectives and methods.

### ARTE 690 Issues and Methods of Inquiry in Art Education

Semester course; 3 lecture hours. 3 credits. Readings and discussions of studies in art education and related research emphasizing possibilities for implementation by art teachers. Methods of research in the field will

be reviewed and sample research proposals will be developed by the students.

### ARTE 799 Thesis

Semester course; 1-6 credits. May be repeated.  
Prerequisite: Completion of all formal course work, candidacy and approval of the department chair.  
Preparation of a thesis is based upon independent research.

## Department of Art History

Brownwell, Charles E., Professor

Ph.D. Columbia University  
17th and 20th century, American architectural history and decorative arts, Renaissance to early 20th century European art and architecture.

Farmer, James D., Department Chair and Associate Professor

Ph.D. University of Texas at Austin  
Pre-Columbian, Native American, modern art of Mexico.

Garberson, Eric G., Assistant Professor

Ph.D. Johns Hopkins University  
Late 18th to 19th century European art and architecture, museology.

Hobbs, Robert C., Rhoda Thalheimer Endowed Professor of American Art

Ph.D. University of North Carolina at Chapel Hill  
19th and 20th century American, Native American.

Jacobs, Fredrika H., Professor

Ph.D. University of Virginia  
Aesthetics, Renaissance, Baroque.

Lawal, Babatunde, Professor

Ph.D. Indiana University, Bloomington  
Traditional and contemporary African Art, African-American Art, Art Renaissance, Baroque, Modern.

Perry, Regina A., Professor Emerita

Ph.D. Western Reserve University  
African, Oceanic, Anglo-American, Colonial, African-American, Native American, architectural history.

Risatti, Howard, Professor

Ph.D. University of Illinois  
20th Century, criticism.

Schreffler, Michael J., Assistant Professor

Ph.D. University of Chicago  
Baroque, colonial and modern art of Latin America, art of Spain.

### Emeritus faculty

Koplin, Bruce M., Professor Emeritus

M.F.A. Virginia Commonwealth University  
Museology, folk art of the United States, 19th century decorative arts.

### Affiliated graduate faculty

Bradley, David, Associate Museum Director, Virginia Museum of Fine Arts

B.S. Virginia Commonwealth University  
Museum development and marketing.

Cormack, Malcom, Paul Mellon Curator, Virginia Museum of Fine Arts

M.A. University of Cambridge  
18th and 19th century British painting.

Lounsbury, Carl R., Architectural Historian, Colonial

Williamsburg Foundation

Ph.D. George Washington University

17th and 18th century American and English architectural history.

Trusch, Ida M., Director, Trusch-Gilbert Design Inc.

M.F.A. Virginia Commonwealth University  
Museum exhibition design.

The department offers a broad-based education in the humanistic discipline of art history in three different tracks. The first track offers a degree in art history that stresses a general comprehensive knowledge of the field on the master's level, as well as the opportunity to develop professional skills of research and writing. Throughout, expertise is developed in criticism and the historiographic methods, such as connoisseurship, stylistic analysis and iconography. Individual research is encouraged through seminars, independent projects and, ultimately, the writing of a thesis.

The Department of Art History offers a second track which concentrates on the humanistic study of architectural history. General comprehensive knowledge in the field of architectural history as well as in that of art history is stressed in relation to work in the areas of urban studies and/or historic house museums.

The Department of Art History also offers a third track in museum studies, one which takes particular advantage of the rich cultural facilities of Virginia's urban environment. The program is run in coordination with numerous local and regional museums, stressing on-site instruction and internships. An opportunity is offered for the study of curatorial and administrative aspects, as well as educational programming for museums.

Overseas studies are available through university-sponsored programs abroad in Europe and Asia. Graduate assistantships and fellowships are available to full-time students.

### M.A. – historical

Graduate studies leading to the M.A. degree in art history are intended to train students to become creative and accomplished teachers and scholars in the discipline of art history. The program is designed to provide a comprehensive knowledge of the major areas and historical periods of art as well as the various research and methodological skills requisite to the field.

The requirements listed below are in conjunction with School of the Arts graduate admission and degree requirements.

### Admission requirements

In addition to the School of the Arts requirements, applicants should have completed a minimum of 21 undergraduate semester credits in art history with additional work in relevant humanities and social science courses, such as English, philosophy, foreign language and history. Applicants should include with their application an undergraduate research paper in art history to serve as a writing sample. Students whose undergraduate training is less extensive may be admitted provisionally and subsequently attain full graduate status.

### Degree requirements

A total of 30 credits in course work and thesis

	credits
Art history (period courses)	21
Historiography and methodology	3
Thesis	6
	<hr/> 30

At least six of the 21 art history credits must be taken in seminar classes.

Degree candidates must have a reading knowledge of German or any appropriate Romance language. The requirement may be fulfilled after admission by passing the relevant foreign language examination.

Students also must demonstrate general programmatic competence in art history by passing a comprehensive examination, taken sometime toward the end of the course work.

The master's program culminates with a thesis, written under the direction of a departmental adviser and a thesis committee.

For more complete information and details on these procedures, contact the Department of Art History.

### M.A. – architectural history

The Department of Art History offers a master of arts degree with a track in architectural history. While concentrating in architectural history, students are required to take courses in art history as well as museum studies and/or urban studies and planning. Such a program is designed for students who wish to pursue careers as academicians or practitioners in the field, as well as for those who wish to pursue a doctoral degree. The courses taken in museum studies, or in conjunction with the Department of Urban Studies and Planning, provide a unique interdisciplinary approach to the study of architectural history.

## Admission requirements

In addition to the School of the Arts requirements, applicants should have completed a minimum of 21 undergraduate semester credits in art and/or architectural history of which six credits must be in the survey of architectural history. Some basic drafting experience is also recommended. Additional work in relevant humanities and social sciences, such as literature, philosophy, foreign language and history is necessary. Applicants should include with their application an undergraduate research paper in art history to serve as a writing sample. Students whose undergraduate training is less extensive may be admitted provisionally and subsequently attain full graduate status.

## Degree requirements

A total of 39 credits in course work and thesis

	credits
Architectural history	12
Art history (period courses)	9
Historiography and methodology	3
Urban studies and urban planning and/or museum studies	9
Thesis	6
	<hr/> 39

At least three of the 12 architectural credits and three of the art history credits must be taken in seminar classes.

Degree candidates must have a reading knowledge of German or any appropriate Romance language. The requirement may be fulfilled after admission by passing the relevant foreign language examination.

Students also must demonstrate general programmatic competence in art history by passing a comprehensive examination taken sometime toward the end of the course work.

The master's program culminates with a thesis, written under the direction of a departmental adviser and a thesis committee.

For more complete information and details on these procedures, contact the Department of Art History.

## M.A. – museum studies

The three-year program in museum studies stresses those attitudes and skills necessary to accomplish the major goals of any professional museum operation: to collect, to preserve, to exhibit and to interpret the art and artifacts of the past and present within an extended curriculum and professional museum environment. The course of study also includes an internship for academic

credit under the direct supervision and professional guidance of individuals in the field.

The curriculum provides a broad educational background in art history and, in the field, will include studies in connoisseurship, registration methods, exhibition design, and educational programs for museums. It also provides a more particularized experience in areas in which the student desires to develop expertise. These areas include museum theory and administration, historic house museum, curatorship and contemporary alternative space gallery.

## Admission requirements

In addition to the School of the Arts admission requirements, applicants should have completed a minimum of six credits in the survey of western art, nine credits of period studies and some undergraduate work in the humanities. Applicants should include with their application an undergraduate research paper in art history to serve as a writing sample. Any applicant whose training is less extensive may be provisionally admitted and subsequently may gain full graduate status upon completion of the deficiency.

## Degree requirements

	credits
Museum studies	12
Museum internship	3
Art history (period courses)	12
Art historiography and methodology	3
Museum project or thesis	6
	<hr/> 36

At least three of the 12 art history credits must be taken in a seminar class. Museum studies students must have a reading knowledge of German or any appropriate Romance language. This requirement may be fulfilled after admission by passing the relevant foreign language examination.

Students also must demonstrate general programmatic competence in museum studies and art history by passing a comprehensive examination taken toward the end of the course work.

An internship at one of the cooperating local or regional museums is a degree requirement of particular importance, enabling students to apply their knowledge and to develop a personal awareness of effective museum exhibition procedures. As a culmination to the course of study, students may opt to plan and mount a major exhibition on campus or at a museum in lieu of a written thesis with the approval of the department.

## Ph.D. program in art history

The Ph.D. in the history of art is a research-oriented degree designed to train critical and productive scholars who are well-grounded in the literature, methodology and major art historical problems in a designated area of study. The program's focus is on interdisciplinary and multicultural studies utilizing new critical methodologies.

Doctoral students will undertake an established program of course work and will be engaged in directed research and scholarly exposition within specialized areas of art historical inquiry. The Ph.D. program in the history of art is designed to prepare participants for roles in teaching and curatorial positions at museums in departments of collection management and educational programming.

## Degree requirements

Course work beyond the master's degree in art history:

	credits
Major area	9
Minor area	6
Art history electives	9
Dissertation	6
	<hr/> 30

The requirements of the School of Graduate Studies for candidacy exams and dissertation committees apply to participants in this program. Part-time study for portions of the program is possible.

## Admission to the Ph.D. program

To enter the doctoral program, the applicant must have the approval of the Graduate Committee, the chair of the Department of Art History and ultimately final approval from the director of graduate studies in the School of the Arts and the dean of the School of Graduate Studies. In addition to all required VCU graduate application materials, prospective Ph.D. students should submit either a completed master's thesis or two writing samples. In addition to scores from the GRE, Art History Ph.D. applicants must also submit scores for the GRE Writing Assessment exam, administered separately through GRE testing. In certain cases, a personal interview with the graduate committee or a faculty member may also be requested. Students who have completed all of the requirements (including the language requirements) for the master of arts degree in the Department of Art History at VCU except the master's thesis may request admission to the doctoral program by



submitting a formal written request accompanied by two research papers to the departmental Graduate Committee. The Graduate Committee may waive the requirements of the master's degree and the writing of the master's thesis, and grant the student entrance into the doctoral program. (Such a waiver does not constitute a master's degree). Students who have completed a master of arts degree in art history at VCU or any other accredited institution will be eligible to apply directly to the doctoral program.

Upon completion of the first nine credits of course work (first semester), the student will choose a program adviser, who, together with the departmental chair of the Graduate Committee, will advise the student in establishing a program of study.

For application materials, write to: Director of Graduate Studies, School of the Arts, 325 N. Harrison St., Pollak Building, Richmond, VA 23284-2519.

### Requirements for the Ph.D. degree

Students must have demonstrated competency in one foreign language at the time of application to the Ph.D. program. Reading proficiency in a second language must be demonstrated by the completion of the second semester of doctoral course work. (Although French and German are typically the two languages of proficiency, the student may be required to demonstrate proficiency in other languages for study in particular areas.) A foreign language requirement for a previous M.A. degree may upon appeal be applied to the language requirement for the Ph.D. curriculum. Ph.D. students must satisfy each of the following criteria for successful completion of the program: a) 24 credits of prescribed graduate course work beyond the Master's degree; this must include a minimum of 6 credits in Modern and 6 credits in non-Western areas, and a minimum of 12 credits in seminar courses; b) all language proficiency requirements; c) the comprehensive slide and field examinations; d) approved dissertation proposal with candidacy granted; and e) completed dissertation and successful defense. All degree requirements must be completed within seven years of the first semester of enrollment in the doctoral program.

### Majors and concentration

Ph.D. students must select major and minor areas under the direction of two different full-time department faculty members. The same faculty members may not

supervise both areas for a single student. Students will select an area of minor concentration, which may be from any area of art historical inquiry outside the major or, upon approval of the Graduate Committee, may be outside the department. Students will be particularly encouraged to undertake cross-cultural investigations.

Nine credits will be taken in the major area and six in the minor; nine additional elective credits may be taken from any art history area. With approval of the Graduate Committee, students may substitute three elective credits with a course outside of the department.

### Comprehensive exam/admission to candidacy

All master's and doctoral students enrolled in the graduate program in art history must pass the departmental comprehensive slide examination given each semester. Doctoral students will be required to pass a field comprehensive examination, consisting of written and oral components. After satisfactory completion of the comprehensive examination and demonstration of proficiency in two languages, the student will work with an adviser to establish a committee and will submit to said committee a dissertation proposal. Upon approval of the dissertation proposal, candidacy for the doctoral degree will be granted. Only after candidacy is granted may a student enroll for dissertation credits. (A student who does not pass the comprehensive examination may take that exam a second time. This second examination must be taken within six months of the first attempt.)

### Dissertation

After admission to candidacy, participants proceed to complete and defend their dissertation. This is done under the supervision of the dissertation director working in concert with the dissertation committee. Participants are required to maintain continuous enrollment of at least three credit hours per semester (excluding summer) until they have attained six hours of dissertation credit, after which they may enroll for as few as one credit per semester. The number of credit hours per semester is expected to reflect the intensity of use of university resources, especially faculty time. The dissertation must represent independent research which is devoted to an original question or hypothesis with the appropriate development, analysis and interpretation. Successful defense of the dissertation completes the requirements for the degree.

## General information

### Financial assistance

Although financial assistance is limited, funds are available. No prospective student should refrain from seeking admission to the school for financial reasons alone. However, since funds available through the School of the Arts are limited, applicants are strongly urged to seek additional sources to finance their education.

### Research and teaching assistantships

Research and teaching assistantships may be available to doctoral students. Additional information is available from the director of graduate studies, School of the Arts.

### Graduate courses in art history (ARTH)

#### ARTH 502 Historical Preservation and Architectural History

Semester course; 3 lecture hours. 3 credits. An introduction to the methods or research, record keeping and reporting used in architectural history, and to the evolution of the discipline, especially in relation to historic preservation.

#### ARTH 504 Advanced Studies in Prehistoric and Ancient Art

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of artistic development in one or more ancient and prehistoric cultures, such as in Africa, Asia, Europe or the Americas. See the Schedule of Classes for specific topic to be offered each semester.

#### ARTH 505 Advanced Studies in Greek, Etruscan, and Roman Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the art and ideas of the classical Greek and Roman cultures, including the Etruscans. See the Schedule of Classes for specific topic to be offered each semester.

#### ARTH 519 Advanced Studies in Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the Proto-Renaissance, Early Renaissance or High Renaissance in Europe or Latin America. See the Schedule of Classes for specific topic to be offered each semester.

#### ARTH 524 Advanced Studies in Baroque and 18th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of England, France, the low countries, Italy, Spain, Latin America, Germany and Austria during the Baroque period and/or 18th century. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 529 Advanced Studies in 19th-century Art and Architecture**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the 19th-century including Neoclassicism, Romanticism, Realism Impressionism in Europe and/or America. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 530 Guided Study Abroad**

Semester course; 1-6 credits.

**ARTH 539 Advanced Studies in 20th-century Art and Architecture**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the 20th century in Europe and/or America. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 542 Advanced Studies in the Architecture of Richmond**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. An advanced, detailed study of a selected aspect of the development of the architecture of the city of Richmond. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 544 Advanced Studies in Art and Architecture of the United States**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the United States. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 549 Advanced Studies in the Art and Architecture of Asia**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of India, China, Korea, Japan, Southeast Asia or the Middle East. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 552 Art and Architecture of Central, Eastern and Southern Africa**

Semester course; 3 lecture hours. 3 credits. A study of the major art-producing cultures of Central Africa, including the Cameroon, Gabon and Zaire; East Africa including Kenya, Tanzania and Mozambique; and Southern Africa, Bushman art, prehistoric cave paintings and rock engravings.

**ARTH 554 Advanced Studies in African or Oceanic Art and Architecture**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of African or Oceanic cultures. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 555 Advanced Studies in Aesthetics and Art Theory**

Semester course; 3 lecture hours. 3 credits. An advanced, detailed investigation of aesthetic theories and concepts in art.

**ARTH 556 Advanced Studies in Ideas and Criticism in Art**

Semester course; 3 lecture hours. 3 credits. An advanced, detailed examination of specific concepts in the literature of art criticism with particular emphasis on the principle writings of leading American critics.

**ARTH 569 Advanced Studies in Museum Methods**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of nine credits. Advanced instruction in the major aspects of museum administration. Lectures by museum personnel and workshops in a variety of museums. A major research project is required.

**ARTH 571 Advanced Studies in Film Theory**

Semester course; 3 lecture hours. 3 credits. Advanced, detailed study of the theories and criticism of film, dealing with medium, form, function and psychology.

**ARTH 574 Advanced Studies in Film**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed examination of selected topics in the history of film. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 575 Advanced Studies in the History of Photography**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed examination of selected topics in the history of photography. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 580 Registration Procedures for Museums**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A study of the standard registration procedures and the current vocabulary employed by the profession. Professional ethics will be stressed to enable the students to become more fully aware of the importance within the museum system.

**ARTH 581 Museum Exhibitions**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. The study of exhibitions for museums including design, fabrication, lighting, brochures, invitations and publications.

**ARTH 582 Educational Program and Public Relations for Museums**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A study of programming for an art center/museum, including organization of permanent displays, special exhibitions, lectures, docent programs for children and adults and traveling exhibition services. Special emphasis will be placed on the use of audiovisual materials and techniques in the exhibitions and interpretation programs, as well as the techniques of public information, including press releases, use of television, radio, newspapers and scholarly publications.

**ARTH 583 Curatorship and Connoisseurship**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An examination of the curator's relationship and responsibilities to the museum system, research methods, methods of acquisition, organization of museum reference library (including slides and other audiovisual materials), exhibition catalogues, clippings and file and computer retrieval systems.

**ARTH 584 Museum Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ARTH 464, 465 and/or permission of instructor. A study of museum organization, including staff organization and relationship of director to board, building and grounds, heating and humidity control, guarding and fire control, special installments and shops, membership programs, museum finances for operation and acquisition funds, grants, promotion, development and overall responsibility to the community and profession.

**ARTH 590 Art Historiography and Methodology**

Semester course; 3 lecture hours. 3 credits. Basic methodology for beginning art history graduate students. An examination of the traditional research methods of the art historical discipline, geared to familiarize students with standards in research and scholarship.

**ARTH 591 Topics in Advanced Art and Architectural History**

Semester course; variable; 1-6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of instructor. An in-depth study of a particular aspect of the art and architecture of both Old and New World cultures. Course consists exclusively of extended off-campus trips to sites and collections throughout the United States and abroad. See the Schedule of Classes for specific topics to be offered each semester.

**ARTH 593 Advanced Museum Internship**

Semester course; 9 to 18 studio hours. 3 to 6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of instructor, chair of the graduate committee and/or chair of the Department of Art History. Advanced fieldwork in a local, regional or national museum.

**ARTH 602 Native American Art and Architecture of the Southwest United States**

Semester course; 3 lecture hours. 3 credits. A study of the major prehistoric and historic native cultures of the Southwest, considered in terms of the characteristics that distinguish them from each other and that show continuity to modern forms. Emphasis is placed on use of modern Pueblo and non-Pueblo art forms as models for interpreting prehistoric forms of the Anasazi, Hohokam, Mogollon, Navajo and related cultures.

**ARTH 691 Topics Concerning the Yoruba Presence in the Americas**

Semester course; 3 lecture hours. 3 credits. May be repeated. An examination of Yoruba-inspired cultural and artistic traditions in North and South America and the Caribbean. See the Schedule of Classes for specific topic to be offered each semester.

**ARTH 699 Museum Project**

Semester course; 3-6 credits. Prerequisite: Permission of departmental graduate committee and chair of the department of art history. The planning, mounting and documentation of a major exhibition on campus or in a local/regional museum.

**ARTH 714 Seminar in Pre-Columbian Art and Architecture**

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of pre-Columbian art in the Mesoamerican and Andean regions.

### ARTH 752 Art and Architecture of Nigeria

Semester course; 3 lecture hours. 3 credits. A study of the culture and traditional art forms of Nigeria, from around 500 B.C. to present, including architecture, sculptural works in wood, stone, ivory and metal, royal attire, jewelry and weaponry. Special emphasis will be placed upon the art of the Yoruba and Benin bronzes.

### ARTH 759 Seminar in Aesthetics, Theory and Criticism of Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. An advanced, detailed study of selected topics of aesthetics, art theory and criticism in a seminar situation. See the Schedule of Classes for specific topic to be offered each semester.

### ARTH 761 Seminar in Latin American Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Renaissance art in the Caribbean, Mexico, Central and South America.

### ARTH 762 Seminar in Latin American Seventeenth- and Eighteenth-Century Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Baroque and Rococo art and architecture in the Caribbean, Mexico, Central and South America.

### ARTH 780 Aspects in Christian Iconography

Semester course; 3 lecture hours. 3 credits. Seminar: the study of meaning in the visual arts of Europe from the Middle Ages to the Neoclassical period. Students will analyze special themes of a Christian or Classical derivation and study major cultural shifts within a broader historical perspective.

### ARTH 781 Aspects of Buddhist Iconography

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Seminar: research into the origins and expansion of Buddhist art in Asia.

### ARTH 782 Aspects of Hindu Iconography

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Seminar focusing on research into the origins and expansion of Brahmanical Hindu art in Asia.

### ARTH 789 Problems in Advanced Art and Architectural History

Semester course; 3 lecture hours. 3 credits. May be repeated. Seminar for scholarly research and discussion of specific issues.

### ARTH 791 Topics in Early Modern Art

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth investigation of American and/or European art and architecture of the early 20th century. See the Schedule of Classes for specific topic to be offered each semester.

### ARTH 797 Directed Research Project

Semester course; variable credit; 1-3 credits. May be repeated for a maximum of six credits. Prerequisite: Permission of instructor, coordinator of graduate studies and chair of the department of art history. Advanced individual work on subject to be formulated by student and instructor.

### ARTH 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisite: Completion of all formal course work, comprehensive examinations, foreign language examination, and approval of the departmental chair of graduate studies and department chair. Preparation of a thesis based on independent research.

### ARTH 899 Dissertation Research

Semester course; variable credit. May be repeated. A minimum of six semester hours. Prerequisite: Completion of all course work and foreign language requirements; students must have been granted Ph.D. candidacy. Preparation of a dissertation based on independent research.

## Master of Fine Arts in Fine Arts

ceramics	fibers
furniture design	glass
jewelry/metal	painting
printmaking	sculpture

## General program description

Students may be admitted to one of the following School of the Arts master of fine arts degree tracks: ceramics, fibers, furniture design, glass, jewelry/metal, painting, printmaking or sculpture. Students completing the M.F.A. in fine arts will be prepared for professional artistic practice directed toward the creation of works of art, the application and transmission of knowledge about works of art and their interrelationships with each other and with other aspects of culture. The graduate program advances the development of:

- individual studio and scholarly talents, interests and philosophies, used creatively both to expand and preserve our cultural heritage,
- professional studio competence as exemplified by a significant body of work,
- individuals with the potential to solve contemporary problems in all aspects of the visual arts and to explore and address new questions and issues,
- professional competence in the dissemination of knowledge, including logical, clear verbal and written presentation of aesthetic ideas in teaching and other contexts, and
- scholarly competence in the organization, evaluation and interpretation of knowledge.

## Characteristics of the program

In M.F.A. studio art programs, assessment of progress is conducted on a regular and periodic basis through scheduled critiques and final course critiques and evaluations.

Students have frequent opportunities to exhibit their work in the context of their educational programs. They are encouraged to develop and present their work in circumstances that develop connections with the professional world related to their course of study. Students are admitted to degree candidacy after receiving approval by a faculty review committee.

## Program requirements

The M.F.A. candidate is required to present a final body of work demonstrating professional competence. This usually takes the form of an exhibition, written statement and oral review by a graduate faculty committee. The documentation of the culminating work is done in a form which can be retained by the university.

## Degree requirements

### M.F.A. in ceramics, fibers, furniture design, glass or jewelry/metal

Program pattern	credits
Studio	42
Electives, including art history	9
Graduate seminar	9
	60

### M.F.A. in painting or printmaking

Program pattern	credits
First semester	
Major departmental studio	6
Approved graduate elective	3
Art and critical theory (PAPR 527)*	3
Graduate seminar (PAPR 690)	3
	15
Second semester	
Major departmental studio	6
Approved graduate elective	3
Art and critical theory (PAPR 528)*	3
Graduate seminar (PAPR 690)	3
	15
Third semester	
Major departmental studio	6
Approved graduate elective	3
Non-studio graduate elective	3
Graduate seminar (PAPR 690)	3
	15

Fourth semester	
Major departmental studio**	9
Approved graduate elective	3
Graduate seminar (PAPR 690)***	3
	15
	60

\* Students who received credit as VCU undergraduate students for PAPR 527, 528, may substitute for a non-studio graduate elective.

\*\* An exhibition will be required as a prerequisite for graduation.

\*\*\* Enrollment in the graduate seminar is mandatory for the duration of the student's study in the graduate program.

## M.F.A. in sculpture

Program pattern	credits
First semester	
Studio (graduate sculpture)	8
Elective	3
Graduate seminar*	4
	15
Second semester	
Studio (graduate sculpture)	8
Elective	3
Graduate seminar*	4
	15
Third semester	
Studio (graduate sculpture)	8
Elective	3
Graduate seminar*	4
	15
Fourth semester	
Studio (graduate sculpture)	8
Elective	3
Graduate seminar*	4
	15
	60

\* Enrollment in the graduate seminar is mandatory for the duration of the student's study in the graduate program.

## Admission requirements – M.F.A. in fine arts

### Undergraduate preparation

In addition to the School of the Arts admission requirements, applicants in the visual arts must have completed a minimum of 36 semester hour credits in art at the undergraduate level.

## Portfolio

### Ceramics, fibers, furniture design, glass and jewelry/metal

20 slides of recent work in the discipline media area of application (i.e., ceramics, fibers, wood/furniture design, glass, jewelry/metal).

### Painting

12 slides of representative work.

### Printmaking

12 slides of representative work.

### Sculpture

A minimum of 20 slides of representative work, three of which must be drawings.

## Department of Crafts

Hammersley, William S., Associate Professor  
M.F.A. University of Wisconsin–Madison  
Woodworking, furniture design.

Hawthorne, John, Associate Professor  
M.F.A. Cranbrook Academy of Art  
Fabric design, textiles.

Iverson, Susan, Professor  
M.F.A. Tyler School of Art  
Tapestry, textiles.

Meyer, C. James, Professor  
M.F.A. State University College, New Paltz  
Metalsmithing, jewelry.

Risatti, Howard, Professor  
B.M. Roosevelt University  
M.M. Roosevelt University  
M.A. University of Illinois  
Ph.D. University of Illinois  
Rosenbaum, Allan, Professor  
M.F.A. Virginia Commonwealth University  
Ceramics.

Thompson, Lydia, Assistant Professor  
B.F.A. Ohio State University  
M.F.A. Alfred University

Wax, Jack,  
M.F.A. Rhode Island School of Design  
Glass.

The Department of Crafts offers graduate course work leading to the M.F.A. degree in five disciplines: ceramics, fiber, furniture design, glass and jewelry/metal.

Within the studio concentration, emphasis is placed on self-motivation, individual investigation, and the development of professional attitudes and skills. Graduate students are expected to demonstrate a serious commitment to their work and to develop mature ideas and forms of expression. Admission to the graduate program is highly selective and competitive.

The Department of Crafts is housed in the new Fine Arts Building that includes private and semi-private graduate studios. These new

facilities provide a safe and excellent physical environment in which to work. Graduate students have access to well-equipped studios in each of the five media areas along with a computer lab and wood shop. The building also houses the Department of Sculpture and the Department of Painting and Printmaking. Interaction among departments is encouraged.

The M.F.A. program requires 60 credits, which students usually complete in two years of full-time study. The majority of credits are taken in the student's area of specialization. Graduate seminars, art history courses and other studio/academic electives round out the graduate student's individualized program. Studio visits and critiques with visiting artists are an important aspect of the program.

Graduate students interact formally and informally with the faculty in their areas and with other faculty in the School of the Arts. Each graduate student works closely with a faculty committee that meets two times a semester for critiques and discussions. At the end of the first year, students present their work to their committee and departmental faculty in a candidacy review. At the successful completion of the 60 credits, a thesis exhibition is mounted at the university's Anderson Gallery or at an alternative venue.

The M.F.A. is the terminal degree in the studio areas and is a requirement for most university teaching positions. Every effort is made to assist students in gaining valuable teaching experience while they are in the program. The department financially aids the students through a variety of scholarships and graduate assistantships. Opportunities exist for qualified students to teach courses during the academic year and in summer school.

## Graduate courses in crafts (CRAF)

### CRAF 547 Ceramic Technology

Semester course; 3 lecture hours. May be repeated. See the Schedule of Classes for specific topic to be offered each semester.

### CRAF 591 Special Topics and Practicum

Semester course; 1-3 credits. May be repeated. Prerequisite: Permission of instructor. A topical seminar/workshop offered in a variety of craft subjects or issues not included in the regular curriculum. See the Schedule of Classes for particular topic or topics to be covered each semester.

### CRAF 601 Metal or Jewelry

Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Personal investigation of materials, processes, and attitudes relating to the creative production of metal and/or jewelry forms.

### CRAF 621 Furniture Design

Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Design, research, and experimentation in wood and varied materials, relating to a body of work demonstrating the student's mastery of material.

### CRAF 641 Ceramics

Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Problems in the design and production of functional and nonfunctional ceramic objects as well as study of experimentation in ceramic technology and kiln design.

### CRAF 651 Glassworking

Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Prerequisite: Permission of instructor. Investigation of and experimentation with the ideas, material, and processes relative to the production of glass forms.

### CRAF 661 Textiles

Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Work in contemporary and traditional textile techniques.

### CRAF 690 Graduate Seminar

Seminar course; 1 or 3 lecture hours. 1 or 3 credits. May be repeated. Degree requirement for graduate students in the Department of Crafts. A weekly seminar for the purpose of discussing contemporary issues in the arts as they affect the artist-craftsperson.

## Department of Painting and Printmaking

Baldes, Peter, Assistant Professor  
M.F.A. Alfred University

Bolduan, Ruth, Associate Professor  
M.F.A. The American University  
Painting.

Bumgardner, James, Professor Emeritus  
Studied with Hans Hofmann  
Painting.

Donato, Gerald M., Professor  
M.F.A. University of Wisconsin  
Painting.

Drought, Michael H., Associate Professor  
and Director of Off-campus Graduate Programs,  
School of the Arts  
M.F.A. University of Wisconsin  
Painting.

Freed, David C., Professor  
M.F.A. University of Iowa  
Printmaking.

Gower, Reni, Associate Professor  
M.F.A. Syracuse University  
Painting.

Johnson, Ronald B., Administrative Director  
M.F.A. Virginia Commonwealth University

Kaneda, Shirley, Assistant Professor, Thalhimer Faculty  
Fellow  
B.F.A. Parsons School of Design  
Painting.

Kevorkian, Richard E., Professor Emeritus  
M.F.A. California College of Arts and Crafts  
Painting.

Martin, Bernard M., Professor Emeritus  
M.A. Hunter College  
Painting.

Miller, James B., Professor  
M.F.A. University of Arkansas  
Painting and printmaking.

Pollak, Theresa, Professor Emerita  
Attended New York Arts Students' League  
Painting.

Roth, Richard, Professor and Department Chair  
M.F.A. Tyler School of Art of Temple University  
Painting.

Russell, Milo F., Professor Emeritus  
M.A. University of Virginia  
Painting

Tapia, Javier, Associate Professor  
M.F.A. University of Texas  
Painting.

Tisserat, Barbara, Associate Professor  
M.F.A. University of Wisconsin  
Printmaking.

Wetton, Philip S., Professor Emeritus  
Diploma Covonoy College  
Printmaking.

Yarowsky, Morris, Professor  
M.F.A. California College of Arts and Crafts  
Painting.

The Department of Painting and Printmaking offers a graduate program of study leading to the M.F.A. degree. Students admitted to the program are expected to have achieved a high level of competence in either painting or printmaking. The graduate program is designed to encourage the development of professional attitudes and skills, with an emphasis on individual investigation.

The Master of Fine Arts Program is based on intensive studio practice at an advanced level in the areas of painting and printmaking. The program is highly selective and is presently limited to 15 participants.

The Painting and Printmaking Graduate Program is housed in the new Fine Arts Building with 15 individual graduate studios plus a large graduate printmaking area. Graduate students also have access to four state-of-the-art undergraduate printmaking studios: etching, lithography, screenprinting and digital. These new facilities provide an excellent physical environment for the graduate program with easy access to the other fine art areas of sculpture and crafts. The School of the Arts is ranked among the top 20 best graduate fine arts programs in the country by U.S. News & World Report. This ranking is based on the professional reputation of the program's faculty, and on the outstanding accomplishments of

the students. Established in 1928, the Department of Painting and Printmaking was the first department in what has become the School of the Arts. For nearly 70 years, the department has made significant contributions to the development of the School of the Arts' reputation as one of the premier art schools in the country.

The Master of Fine Arts Degree Program in painting or printmaking requires 60 credits and is usually completed in two years of full time study. Most of these credits are in studio areas and are augmented by related courses in specialized academic fields. A graduate seminar meets weekly and addresses topics related to contemporary art and theory. Two semesters of Art and Critical Theory, a course that surveys the major themes of contemporary art criticism, also are required.

Graduate students meet with individual committees composed of three faculty members. Each committee and student conducts an ongoing dialogue and critique. At the end of the second semester students discuss their work at a candidacy critique comprised of their committee and additional faculty. At the successful conclusion of the program's second year M.F.A. recipients mount a comprehensive exhibition of their work at the university's Anderson Gallery.

The Department of Painting and Printmaking supports an active and ambitious program of visiting artists and lecturers. Leading figures in the world of contemporary art visit to discuss their work, critique, visit studios, conduct workshops and meet with students throughout the year.

The master of fine arts degree is the terminal degree in the studio areas of fine arts and is a requirement for most college and university teaching positions. Many graduate students have gained teaching experience in the department as part of their assistantship responsibilities, teaching classes in painting, drawing and printmaking. The department assists graduate students financially through a variety of teaching assistantships, graduate assistantships and scholarships.

## Graduate courses in painting and printmaking (PAPR)

### PAPR 525 Issues in Contemporary Visual Arts

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. Prerequisite: Painting and printmaking majors only. The investigation of content and meaning of major directions in contemporary art as they relate to the studio. Students will relate their own work to major movements in contemporary visual art.

### PAPR 527, 528 Art and Critical Theory

Semester courses; 3 lecture hours. 3, 3 credits.  
Prerequisite: General art history or equivalent. Major themes in art criticism and theory from 1940 to the present. This course provides an introduction to the literature of art criticism as well as artists' writings in relation to studio production.

### PAPR 591 Topics in Painting and Printmaking

Semester course; 1-4 credits. May be repeated for a maximum of nine credits with different content. This course will explore selected topics of current interests or needs relative to painting and printmaking. See the Schedule of Classes for specific topics to be offered each semester.

### PAPR 605 Graduate Painting

Semester course; 6 or 12 studio hours. 3 or 6 credits. May be repeated. A studio class in which primary emphasis is placed on the creative disciplines of contemporary painting. Special attention is given to the development of personal expression through individual criticism.

### PAPR 615 Graduate Printmaking

Semester courses; 6 or 12 studio hours. 3 or 6 credits. May be repeated. Specialization in one printmaking medium with emphasis upon technical research and the aesthetic suitability of design to medium.

### PAPR 621 Graduate Drawing

Semester course; 6 studio hours. 3 credits. May be repeated. A studio class with individual criticism. Special attention is given to contemporary concepts. Permission of instructor required for non-painting and printmaking majors.

### PAPR 690 Graduate Seminar

Semester course; 1, 3 lecture hours. 1, 3 credits. May be repeated. Degree requirement for graduate students in the Department of Painting and Printmaking. Weekly seminar for the purpose of discussion of recent artistic developments in painting and printmaking. Critiques dealing with student work will take place.

## Department of Sculpture

Buster, Kendall, Associate Professor  
M.F.A. Yale University  
Helfgott, Myron, Professor  
M.F.A. Southern Illinois University  
Henne, Carolyn, Administrative Director  
M.F.A. Virginia Commonwealth University  
Henry, Charles R., Professor  
M.F.A. Cranbrook Academy  
King, Elizabeth, Professor  
M.F.A. San Francisco Art Institute  
Newton, Carlton, Assistant Professor  
M.F.A. San Francisco Art Institute  
North, Harold, Professor Emeritus  
M.F.A. Virginia Commonwealth University  
Seipel, Joseph, Professor and Department Chair  
M.F.A. Rinehart School of Sculpture  
Van Winkle, Lester, Professor and Acting  
Department Chair  
M.A. University of Kentucky

"In dreams begin responsibilities," William Butler Yeats once said. And so, too, the sculpture department is in the business of fomenting dreams and encouraging responsibility.

The sculpture department provides an environment of high expectation regarding self-motivation, intellectual capacity and responsibility in order to establish those conditions that promote the student's ability to construct a thinking self. Students are encouraged to explore technology's parameters and discover applications to new and traditional modes of expression while continuing to examine the links between art, science, the humanities and the conditions of the world. It is the department's mission to provide students with the seeds of discernment, vocabulary and the skills of analysis and synthesis to become participants in today's dialogue.

The department has six full-time and numerous part-time faculty who represent various directions and attitudes relative to the making of art.

Both formal and informal contact with faculty are designed into the program. Along with the Department of Sculpture's faculty, graduate students are exposed to a vigorous visiting artist schedule. Through studio reviews, seminars and research, the students are expected to build an awareness of contemporary and historical definitions of art that will influence their creative work. In addition to their own investigations, the graduate students participate in and contribute to the undergraduate program.

The graduate sculpture program is housed in a new state-of-the-art facility. There students are provided with a generous amount of studio space and are given time, support and encouragement to pursue their independently determined goals. While the graduate program is generally a two year, four semester in-residence program, students are expected to continue studio pursuits either on campus or at an alternative site throughout the calendar year.

The VCU Department of Sculpture M.F.A. Program is ranked among the top five by U.S. News & World Report (1997-1999).

## Graduate courses in sculpture (SCPT)

### SCPT 500, 600 Graduate Sculpture

Semester course; 4, 8 or 12 studio hours. 2, 4 or 6 credits. May be repeated. Emphasis on individual creative production with periodic exposure of student's work and ideas to the critical attention of the teaching faculty of the department of sculpture and other graduate students.

### SCPT 517 Seminar in Contemporary Sculpture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. A forum for consideration and discussion of recent developments in the field.

### SCPT 591 Topics in Sculpture

Semester course; variable; 1-4 credits. May be repeated for a maximum of 12 credits. This course will explore selected topics of current interests or needs relative to sculpture. See Schedule of Classes for specific topics to be offered each semester.

### SCPT 690 Graduate Seminar

Semester course; 4 lecture hours. 4 credits. May be repeated. Degree requirement for graduate students in the department of sculpture. Weekly seminar for the purpose of exploring recent developments in sculpture and conducting critiques in which students can discuss the ideas and attitudes manifest in their work.

## Master of Fine Arts in Design

film	interior environments
photography	visual communications

## General program description

The purpose of this advanced degree program in design is to prepare the individual designer to assume a leadership role in a complex and expanding profession. The course work, applied experience and research that constitute the program will enable the designer to better solve visual and spatial problems and to function more effectively as an administrator, planner and educator.

The program offers the graduate student the opportunity to use appropriate courses and resources from schools within the university, to participate in internships and research with various agencies and organizations concerned with programs of design, and to view design as an interdisciplinary profession with an essential contribution to make toward the solution of the problems of today.

## Characteristics of the program

The master of fine arts in design is an advanced interdisciplinary program in the study of design which utilizes knowledge and human potential in alternative ways to define problems and create change.

Graduate students not only have the opportunity to work within a design field, such as visual communications, interior environments and photography/film, but also have the opportunity to develop competencies across fields and to engage in research and inquiry of a social or environmental nature to create new visual forms

and communicative content in a rapidly changing society.

## Internship and field experiences

Within a professional school of the arts in an urban university there are excellent opportunities for appropriate graduate field experiences. They include:

- formal arrangements with state agencies, industries, foundations and community organizations which would enable the graduate designer to function as a member of a project team or task force,
- service to various organizations, offered as the need arises, possibly with the student working on a specific problem or project, and
- research internships developed with the university on school-supported or outside-funded projects, especially those that concern social problems, health care and institutional environments.

## Program requirements

### Thesis

The thesis or creative project is a requirement for the M.F.A., design (visual communications) degree, a thesis and exhibition are requirements for the M.F.A., design (photography and film) degree and a research-design project and exhibition are required for the M.F.A., design (interior environments) degree. The culminating work is done in a form which can be retained by the university.

### Examples of thesis

**Interior environments.** An investigation in a scholarly area or specific research and documentation of a technical or creative project.

**Visual communications.** An exhibition of a visual communications problem appropriately documented or a specific research problem which explores the communicative, formal, and/or technological aspects of visual problem solving.

**Photography and film.** An exhibition of a cohesive body of photographs and/or film with the appropriate written documentation.

## Graduate courses in design (DESI)

### Courses common to all subspecialties

#### DESI 601 Interdisciplinary Design Seminar

Semester course; 3 lecture hours. 3 credits. An introductory seminar for beginning graduate students across the three subspecialty areas that examines the mission of the contemporary designer and the technological, psy-

chological, and aesthetic resources. Professional designers, educators from other fields on campus, and resource people from business and industry will participate.

#### DESI 602 Advanced Design Seminar

Semester course; 3 lecture hours. 3 credits. May be repeated. An advanced seminar in which students and faculty from the three subspecialty areas meet and discuss the professional and conceptual aspects of interdisciplinary design activity. Students will draw upon past knowledge and current investigations.

#### DESI 603 Design and Visual Communication Education

Semester course; 3 lecture hours. 3 credits. This course will explore the philosophical, informational, and technical aspects of design education.

## School of the Arts and university courses

The following courses common to all graduate programs in the School of the Arts are available to M.F.A. students in design who desire to engage in research supervised by qualified professors within the school and other academic divisions within the university.

ARTS 592, 692 Individual Projects/Fieldwork

ARTS 704, 705 Research in the Arts

A variety of graduate courses offered within the School of the Arts can be utilized as electives by the student in this degree program. Some examples are:

ARTH 539 Advanced Studies in 20th Century Art and Architecture

ARTH 574 Advanced Studies in Film

PAPR 605 Graduate Painting

PAPR 615 Graduate Printmaking

PAPR 621 Graduate Drawing

SCPT 500, 600 Graduate Sculpture

THEA 603, 604 Problems in the History of Dramatic Literature

VCU offers a wealth of graduate courses that can, as electives, support the educational process and personal development of graduate students.

## Department of Communication Arts and Design

Carter, Robert, Professor

M.F.A. University of Illinois

Graphic design, computer graphic design, semiology, typography.

Chessin, Laura, Assistant Professor

M.F.A. Rhode Island School of Design

Writing, letterform design, lettering.

Colley, David, Associate Professor

M.F.A. University of Illinois

Graphic design, typography, design theory.

Day, Ben, Professor

M.F.A. Louisiana Tech University

Graphic design, typography, design theory.

DeMao, John, Associate Professor

M.P.D. North Carolina State University

Design theory, process and methodology.

Hoskins, Steven, Assistant Professor

M.F.A. Rhode Island School of Design

Interactive design, graphic design.

Kaputof, Robert, Associate Professor

M.F.A. University of California, Berkeley

Videography.

Malinoski, John B., Associate Professor

M.F.A. Rochester Institute of Technology

Graphic design, typography, design theory.

McKelvey, Roy, Associate Professor

M.S. Carnegie Mellon University

Interactive design.

McLaughlin, Mary, Associate Professor

B.F.A. University of Illinois

Typography, graphic design, exhibition design.

Meganck, Robert, Professor

M.F.A. Cranbrook Academy of Art

Graphic design, typography, illustration.

Ouchi, Akira, Associate Professor

M.S. Illinois Institute of Technology

Graphic design, typography, systems.

Wheeler, Sandy, Assistant Professor

M.F.A. Virginia Commonwealth University

Exhibition design, publication design, typography, design theory.

Woolman, Matthew, Associate Professor and Acting Department Chair

M.F.A. Virginia Commonwealth University

Typography, semiology, new media.

The objective of this program is to develop the philosophy and personal direction of students through focusing their resources for functional and theoretical visual communications. The program offers study opportunities in graphic design, typography, computer graphics, time arts, interactive design, design theory and design education.

Students working in the Graduate Center for Visual Communications concentrate on the philosophical, communicative and aesthetic relationships of visual problem solving and the interactive skills leading to the effective articulation of concepts. Although problems in visual communications anticipate refinement of students' technical abilities, education in this program does not emphasize technical instruction.

## Specific admission requirements

The priority deadline for fall admission is Feb. 15. The program will continue to review applications on a space available basis until June 30.

## Undergraduate preparation

The 36 semester credits in studio art should include a minimum of 20 semester credits in visual communications and/or related fields. Under special circumstances, these requirements may be waived.

## Portfolio

A minimum of 20 and a maximum of 40 slides which demonstrate visual organization, creative problem solving ability and potential for research and growth are required. Under special circumstances, these requirements may be waived; applicants are accepted into a provisional course of study.

## Interview

The department strongly recommends that applicants arrange an interview with the associate chair to meet with graduate faculty and current students, and tour facilities. Applicants may contact the department to schedule an interview.

## Typical program pattern

First semester	credits
Visual communications seminar	3
Visual communications workshop	9
Graduate elective	3
	15
Second semester	
Visual communications seminar	3
Visual communications workshop	9
Graduate elective	3
	15
Third semester	
Visual communications seminar	3
Visual communications workshop	9
Graduate elective	3
	15
Fourth semester	
Visual communications seminar	3
Directed research in visual communications	6
Thesis or creative project	6
	15
	60

## Graduate courses in visual communications (CARD)

### CARD 567 Visual Interface Design

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: Permission of instructor. A course concentrating on the visual design and development of human-

computer interface systems. Emphasis is placed on visual design processes and methods in the diverse arena of user interface design.

### CARD 591 Advanced Studio Topics in Visual Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisites: Permission of instructor. Topical studio focusing on research and experimentation in specialized visual communication media.

### CARD 593 Visual Communications Internship

Semester course; 3 or 6 credits. May be repeated to a maximum of six credits. Prerequisite: Permission of chair required. Supervised study in cross-disciplinary visual communications research projects to integrate theory with practice. Training is provided under the direction and supervision of qualified professional practitioners and a faculty adviser.

### CARD 611 Visual Communications Workshop

Semester course; 18 studio hours. 9 credits. May be repeated. A team-taught studio course focusing on the philosophical, communicative, and aesthetic relationships of visual communications problem solving and the effective articulation of concepts.

### CARD 621 Visual Communications Seminar

Semester course; 3 lecture hours. 3 credits. May be repeated. A detailed examination of selected theoretical, historical, aesthetic, and social areas of concern to the designer. Scholarly research, critical analysis, and discussion are expected.

### CARD 631 Visual Communications Teaching Practicum

Semester course; 1 lecture and 6 practicum hours. 3 credits. Prerequisite: Permission of department chair. Observation, instruction, and practice to develop skills in the design, organization, and conduct of courses in visual communications. Explores multiple teaching strategies, student development, learning styles, and evaluation techniques.

### CARD 692 Visual Communications Research/Individual Study

Semester course; 6 studio hours. 3 credits. May be repeated. The structuring, research, execution, and presentation of an independent project in visual communications under the guidance of a faculty adviser.

### CARD 697 Directed Research in Visual Communications

Semester course; 12 studio hours. 6 credits. Prerequisites: Successful completion of 30 credit hours of graduate study and permission of department chair. Supervised investigation and presentation of selected problems in visual communications.

### CARD 699 Creative Project

Semester course; 1-6 credits. May be repeated. Prerequisites: Successful completion of 30 credit hours of graduate study and permission of department chair. A course based on exploration and testing of original and expressive ideas in visual communications. Executed under the supervision of a graduate adviser and review committee.

### CARD 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisites: Successful completion of 30 credit hours of

graduate study and permission of department chair. Preparation of a thesis based on carefully planned and executed independent research or study under the supervision of a graduate adviser and thesis committee. Research emphasis must be placed on problems/processes that represent significant study in design.

## Department of Interior Design

Gao, Chaoyi, Associate Professor

M.F.A. Virginia Commonwealth University  
M.A. Central Academy of Art and Design, China

Harwood, M. Buie, Professor

M.F.A. Louisiana Tech University  
History of interior design and architecture, professional practice and standards, interior design education and process.

Havenhand, Lucinda Kaukas, Assistant Professor

B.A. State University of New York  
B.F.A. Virginia Commonwealth University  
M.A. Virginia Commonwealth University  
M.Phil. Syracuse University

Heneveld, Paula, Assistant Professor

M.A. Cornell University  
Social and behavioral issues, commercial design, lighting analysis.

Hing, Allan, Professor

M.A. in Fine Arts, Syracuse University

Roth, Susan K., Associate Dean for Academic Affairs

M.A. Ohio State University

Whitehead, W. Camden, Associate Professor

M.Arch. Virginia Polytechnic Institute and State University  
Design process, materials, small scale mass production, joint conditions.

Wyllie, William K., Assistant Professor

M.Arch., Catholic University of America

### Emeriti faculty

Field, Jerry J., Professor Emeritus

B.S. Virginia Commonwealth University  
Diploma Parsons School of Design

Gunter, Ben D., Professor Emeritus

A.B. Bridgewater College  
B.F.A. Virginia Commonwealth University  
M.Ed. University of Virginia

Hamilton, Dorothy Tennent, Associate Professor Emerita

Certificate Virginia Commonwealth University

Hester, Robert F., Professor Emeritus

B.A. Wake Forest College  
Diploma Parsons School of Design  
Graduate Study University of London  
M.A. Cornell University  
National Trust Summer School (England)

Yung, Ringo, Professor Emeritus

B.A. Tientsin University  
B.F.A. Tientsin University  
M.F.A. University of Kansas

The M.F.A. degree program in Interior Environments, one of about ten available nationally, is a post-professional degree pro-



gram that allows students the opportunity to develop an individualized direction in scholarship. Initiated in 1979, the program's goal is to produce designers who understand the relationship between research and design and to encourage creativity, innovation and design excellence. The program offers flexibility in curriculum planning and scheduling. Courses address advanced design development, design theory and process, research methods in design, special topics in interior design, advanced design studies, and the development of a comprehensive thesis project of complex scale and scope. An interior design internship is available. Electives may focus on such topics as design education, historical studies, furniture design and computer technology.

Students may enter the interior design program in the fall or the spring semesters. Admission to the graduate degree program follows successful completion on an undergraduate degree program in interior design or in a related design degree program (such as architecture). All students are required to have a cumulative 3.0 GPA before entering the program. A thesis proposal is required by all applicants.

The department offers limited accelerated undergraduate preparation for those individuals who lack full preparation. Assessment of the individual candidate's needs will determine the scope of the preparatory course work. This is an opportunity to gain the skills and design experiences required to qualify for admission to the graduate degree program.

### Specific admission requirements

The department has a very comprehensive Web site with extensive information about the program, interior design in general, faculty, student work and the department newsletter. In advance of scheduling a meeting for department advising or for application to the program, students should review the Web site at <http://www.vcu.edu/artweb/interiors>.

The department relates with the professional interior design community through a variety of activities. We invite featured speakers to share experiences, participate in the annual ASID EXPO, facilitate mentorships with professional designers and support student internships. An active student chapter of the American Society of Interior Designers provides additional enriching opportunities for student involvement.

The program places a strong emphasis on studio design courses. Because of this, students must enroll in only one design studio course

(IDES 601, 602, 603 or 699) each semester. It is recommended that they enroll in IDES 621 Research Methods and Design during the first semester in the program to facilitate the sequencing of graduate thesis work.

Students are required to have computer graphics and word processing proficiency. A laptop computer is required in the undergraduate interior design program. Information about the current computer package is available on the department Web site.

### Portfolio

A minimum of 10 recent design projects which exemplify awareness, understanding and competency in creative design, graphic skills and technical ability are required. Other pertinent data should be included as necessary.

### Degree requirements

A minimum of 60 credits are required within prescribed courses. A research-design project is required to complete the program of study. This project is undertaken and developed in the context of IDES 699 and must consist of the testing of an original idea that is supported by research. This information will be synthesized through the design development process and culminate in an individual creative project of complex scale and scope. Documentation must follow established guidelines and be presented in a form that can be retained by the department and the university. On completion of the thesis, students participate in an oral examination and a graduate exhibition.

### Typical program pattern

	credits
<b>First semester</b>	
Graduate design studio	6
Research methods	3
Seminar elective: Interdisciplinary	3
Studio elective	3
	<hr/> 15
<b>Second semester</b>	
Graduate design studio	6
Research-design thesis investigation	3
Topics in interior design	3
Studio elective	3
	<hr/> 15
<b>Third semester</b>	
Graduate design studio	6
Fieldwork/internship	6
Research-design project thesis	3
	<hr/> 15

### Fourth semester

Design studies	3
Research-design project thesis	9
Seminar elective: Interdisciplinary	3
	<hr/> 15
	<hr/> 60

### Graduate courses in interior environments (IDES)

#### IDES 591 Topics in Interior Design

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Consent of instructor. Explores selected topics of current and relevant interest in interior design. Topics will vary each semester and focus on the needs of the student.

#### IDES 601, 602, 603 Graduate Design Studio

Semester course; 12 studio hours. 6 credits. Prerequisite: Consent of graduate coordinator and instructor. Interior design majors only. Provides individualized advanced studio for designing in specialized areas of interior environments. Topics will vary each semester and focus on the needs of the student.

#### IDES 621 Research Methods in Design

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Consent of instructor. Familiarizes students with the different types of research methods including design, historical, educational, and behavioral; includes information on interior design thesis projects and research.

#### IDES 622 Design Research

Semester course; 3 credits. Work with graduate coordinator or adviser. Emphasizes thesis design research; students prepare a project proposal, conduct investigative research and organize research material via written documentation.

#### IDES 623 Advanced Design Studies

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Consent of instructor. Interior design majors only. Familiarizes students with the expanding body of knowledge on design studies related to interior environments including theory, emerging trends, and future issues.

#### IDES 693 Interior Design Internship

Semester course; 6, 12 studio hours. 3, 6 credits. Prerequisite: Consent of instructor. Interior design majors only. Provides supervised practical work experiences that are coordinated with professional interior designers under the guidance of interior design faculty. Formal arrangements must be made.

#### IDES 699 Research-Design Project - Thesis

Semester course; 2, 6 studio hours. 1, 3, 6, 9 credits. May be repeated. Prerequisite: Approval of Departmental Review Committee. The project must test an original design theory synthesized through the development of a design process, investigative research, and an individual project of complex scale and scope.

## Department of Photography and Film

Bremer, David, Associate Professor  
M.A. Ohio University  
Still photography.

Heroy, John, Associate Professor  
M.F.A. State University of New York at Buffalo  
Still photography.

Long, James T., Associate Professor and  
Department Chair  
M.Arch. 1979 University of Kansas

Quarterman, Dale, Professor and Acting Chair  
M.S. Illinois Institute of Technology  
Still photography.

Williams, David D., Assistant Professor  
M.F.A. Virginia Commonwealth University  
Cinematography.

The Department of Photography and Film seeks through its graduate program to advance the highest standards of the media of photography and film by encouraging the creative and professional growth of both its students and faculty. The goal is to provide a forum for the development and exchange of visual ideas and to encourage its members to translate these ideas through the medium with a high degree of sensitivity and proficiency.

The program is meant to be flexible. Participants in the program may choose to emphasize their search for personal expression by using either traditional or electronic technology to accomplish their personal goals. The program culminates with the presentation of a body of work, both written and visual, that coherently expresses some aspect of the medium.

The successful candidate for the M.F.A. degree will be prepared adequately to continue to function as a working photographer and to begin a career in teaching photography or film.

## Admission requirements

### Undergraduate preparation

The 36 semester hour credits in studio art at the undergraduate level must include a minimum of nine semester hour credits in photography or cinematography.

### Portfolio

**Photography.** A minimum of 20 recent photographs.

**Cinematography.** A minimum of three recent films for which the applicant has had a primary responsibility in production. A videotape may be substituted for one of the films.

## Degree requirements

The advanced study of photography and film is both broad and varied. Therefore, the program's requirements are flexible and determined by the needs of each student on an individual basis. There are, however, a few definite requirements. Each student must have on completion of the program a knowledge of contemporary art history; a more in-depth knowledge of the history of his/her discipline, be it still photography or film; and an understanding of the critical dialogue that is connected with his/her medium. The extent to which courses are suggested for students to meet these requirements depends on their background.

## Typical program pattern

	credits
Photographic studio	24
Seminar in photography and film	12
Research in photography and film	9
Approved electives	12
Graduate exhibition	3
	60

## Graduate courses in photography and film (PHTO)

### PHTO 500 Photographic Studio and Seminar

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisite: Permission of instructor. Experimentation in the studio with various processes for creating the photographic image, leading to producing a cohesive body of work. The seminar examines the technical and aesthetic components of these processes and the language and theories of photographic criticism.

### PHTO 601 Photographic Studio

Semester course; 6, 12 studio hours. 3, 6 credits. May be repeated. Prerequisite: Nonmajors may enroll with permission of instructor. Student will work on specific problems relating to the areas of their major interests. Options will be available in black and white photography, color photography, and motion picture photography.

### PHTO 621 Research in Photography and Film

Semester course; 6, 12 studio hours. 3, 6 credits. May be repeated. Prerequisite: Nonmajors may enroll with permission of instructor. Students will engage in appropriate theoretical, experimental, or historical research in a specific area.

### PHTO 690 Seminar in Photography and Film

Semester course; 3 lecture hours. 3 credits. May be repeated. An examination of contemporary issues and developments in photography and film. Students will have a chance to discuss their work and the work of others.

### PHTO 693 Fieldwork, Internship

Semester course; 6, 12 studio hours. 3, 6 credits. May be repeated. Professional field experience in the theoretical and practical applications of photography and/or film through cooperative organizations. Formal arrangements

will be made with state agencies, industries, community organizations, and professionals in the field.

### PHTO 699 Graduate Exhibition

Semester course; 1, 3 lecture hours. 1, 3 credits. To be taken the last semester of graduate program with approval of the chair and review of student's record. Students in this course will prepare and mount an exhibition of their own work. In addition, they will be asked to provide a complete documentation of the sources and ideas presented in the exhibition.

## Department of Music

Austin, Terry L., Professor  
Ph.D. University of Wisconsin-Madison  
Conducting

Batty, L. Wayne, Professor  
M.M. Chicago Musical College  
Voice, choral music

Bick, Donald A., Associate Professor  
M.M. University of Maryland  
Percussion

Bilyeu, Francile, Assistant Professor  
M.M. University of Tulsa  
Flute

Bilyeu, Landon, Associate Professor  
M.M. University of Tulsa  
Piano

Blank, Allan, Professor Emeritus  
M.A. University of Minnesota  
Composition, theory

Day, Melanie K., Assistant Professor  
M.M. Boston University  
Opera theatre, vocal coaching

Donnell, Cynthia S., Associate Professor  
M.M. University of North Carolina at Greensboro  
Voice, lyric diction

Guerard, Sandra L., Associate Professor  
Ph.D. University of Connecticut  
Music education

Guthmiller, John, Associate Professor and Acting Chair  
D.M.A. University of Colorado  
Voice, conducting

Lohuis, Ardyth, Professor  
D.M.A. College-Conservatory of Music, University of Cincinnati  
Organ, church music, music bibliography

Marrion, Melissa Wuslich, Professor  
M.M. College-Conservatory of Music, University of Cincinnati  
Piano

Newlin, Dika, Professor  
Ph.D. Columbia University  
History, literature, composition (applied)

Patykula, John, Associate Professor  
M.M. Virginia Commonwealth University  
Guitar

Richards, Douglas J., Professor  
M.M. Florida State University  
Jazz

Richardson, Rex, Assistant Professor  
D.M.A., Louisiana State University  
Trumpet, jazz trumpet

Robinson, J. Lawrence, Professor Emeritus  
M.M. University of Michigan  
Organ

Robinson, Nicole, Assistant Professor  
Ph.D., Florida State University  
Music Education

Smetana, Frantisek, Professor Emeritus  
Diploma Ecole Normale de Musique Paris, France  
Cello

Vlahcevic, Sonia K., Professor  
Ph.D. Catholic University  
Piano, theory

Walter, Ross A., Assistant Professor  
D.M.A. Louisiana State University  
Low bass

West, Charles, Professor  
D.M.A. University of Iowa  
Clarinet

The Department of Music views graduate students as musicians who have defined for themselves certain professional and artistic goals. The master of music curriculum is a collaborative effort between students and faculty to help each student achieve these goals. Curricular flexibility accommodates the personal aspirations of each student within a context of quality musicianship. As a member in full standing of the National Association of Schools of Music, all VCU Department of Music curricula meet NASM standards. Students in the performance track may emphasize solo or ensemble performance, conducting or, with the concurrence of their advisory committee and the Graduate Curriculum Committee of the department, develop a blended program of studies.

Participating in the VCU musical community means involvement in a musically rich environment of studio lessons, small classes, independent study, participation in performing organizations and hearing outstanding professional performers in the classical and jazz traditions. On-campus master classes with major touring artists are an important adjunct to the regular instructional program. Student soloists also may appear with regional and university ensembles. Through the Mary Anne Reynolds Chamber Concerts and other events, the department is one of the region's major sponsors of music performances. Approximately 300 students major in music, with an additional 425 university students enrolled each year. Noncredit instruction in music and theatre is offered to more than 200 precollege and adult students annually through the Community School.

The department is housed in three buildings. The principal facility is the Performing Arts Center, which has a 502-seat concert hall, faculty offices, rehearsal rooms and special studios for organ, percussion and

electronic music. The Bowe House contains additional faculty offices and teaching studios. The Music Center has a 750-seat auditorium, classrooms, practice rooms and is home to the Community School of the Performing Arts.

The faculty has 20 full-time members, more than half of whom hold doctorates, and 45 part-time instructors. The faculty are recognized performers, composers and researchers — musician/educators who are active in all facets of the professional music world.

Performance majors study with an applied music faculty comprised of artist/teachers who remain active professional performers. Included are musicians from the Richmond Symphony Orchestra and principal freelance performers in other metropolitan areas such as Washington, D.C. and Tidewater. The faculty includes those who have soloed with major orchestras, operatic and concert singers, recording artists, noted jazz performers, coaches and conductors.

VCU offers the diversity of ensemble conducting experiences essential to the development of the conductor. Students in the conducting track ordinarily elect to specialize in band, choral or orchestral conducting. At the discretion of the major teacher, graduate conducting students assist in rehearsing and conducting major departmental ensembles.

The composition curriculum is centered on private study with faculty who are themselves published composers. Emphasis is placed on the development of traditional compositional skills as well as contemporary and electronic techniques. Student compositions are regularly presented in concert.

The music education program has the flexibility to meet the needs of several career emphases including the teaching practitioner in the public/private schools and the researcher. Many music education classes and workshops are scheduled for off-campus locations and/or summer sessions.

All students work closely with their advisers to select courses consistent with their chosen emphasis and the students' individual needs and circumstances. Independent study may fulfill selected course requirements.

### Admission requirements

Selection is made on the basis of prior academic performance, an audition and/or interview, and a written entrance examination. The applicant should have completed the appropriate undergraduate program or the equivalent for admission as a graduate student in full standing. Admission on a provisional

basis is possible for a student temporarily lacking an appropriate background.

Appointments for auditions are arranged through the Department of Music office. Performance audition tapes may be sent by out-of-state applicants. Preparation in music history and theory is assessed through the Graduate Record Examination Advanced Music test or through a departmentally developed examination which may be re-requested from the department.

### Audition requirements

#### Performance

Prepare at least 15 minutes of material representative of different styles. Voice performance majors must demonstrate knowledge of Italian, French and German diction. Percussion majors must demonstrate ability in snare drum, keyboard percussion and timpani.

#### Composition

A portfolio with a minimum of four works that demonstrate a variety of compositional styles including traditional instrumental and vocal writing.

#### Conducting

An audition/interview demonstrating knowledge of orchestration and music literature, ability to play and harmonize simple melodies at sight, and proficiency in at least one performance area.

#### Music education

A pre-acceptance interview with the coordinator of music education. Applicants expecting to perform a recital in fulfillment of their degree requirements should audition for achievement level placement.

### Program and degree requirements

The master of music degree has three distinct tracks: performance (appropriate for classical or jazz performers and vocal or instrumental conductors), composition and music education. All emphases require a minimum of 30 semester credits distributed as outlined below. The department publishes a Handbook for Graduate Studies in Music. This handbook contains detailed information about each curriculum track, advising candidacy, comprehensive examinations, theses and recitals, departmental policies and other matters important to the process of earning a degree. Every degree-seeking student should obtain a copy of the most recent edition annually.

With the approval of the Graduate Committee of the department, a maximum of six 400-level credits may be presented in fulfillment of the master of music degree requirements when that course work would not normally be expected to be a part of the student's undergraduate preparation.

## Performance Achievement Levels

Ten achievement levels have been established for applied instrumental and vocal study. Each level is explicit in semesters of repertoire, technique, memorization and sight-reading. The table below indicates the levels expected for entrance and required for graduation from each curriculum.

Major track	Entrance level	Graduation level
Performance	VIII	X
Composition	VI	VIII
Music education (recital option)	VI	VIII

## Piano proficiency

Piano proficiency appropriate to the pianistic needs of the various fields of concentration must be demonstrated prior to completion of the degree. Students are encouraged to attempt the proficiency examinations early in their graduate study. Specific requirements are given in the Handbook for Graduate Study in Music.

## Recitals/research documents

The performance and composition curricula require five to six credits in culminating projects. Students and their advisory committees will together select one of three options:

- recital (three credits) and lecture-recital (three credits)
- recital (three credits) and research document on literature or performance (two credits)
- two recitals (three credits each)

Music education students have the option of a thesis, recital, project or substitute course work. Specific information regarding recital content and duration and the preparation of research documents is published in the handbook.

## Comprehensive examinations

Prior to the conferral of a graduate degree, every candidate must pass a written comprehensive examination which may be supplemented by an oral examination. In addition to music history and theory, the examination will cover other areas associated with the student's course of study. It is recommended that this examination be taken early in the

final semester of study. The examination is offered each semester; specific dates are published in the handbook.

Master of music (performance)		credits
Courses in the major field	Required courses include applied performance study, six credits; recitals/research document, five to six credits	11-12
Supportive courses in music	Required courses include MHIS 611-612 Analysis, two to four credits; music history, two to five credits; four to six credits selected from MHIS 690 Bibliography and Research, music history or literature, ensembles, composition or score reading	10-13
Approved electives	Selected from ensembles, pedagogy, accompanying, Seminar in Theory, MHIS 690 Bibliography and Research, advanced orchestration	5-9
Total credits		30

Master of music (composition)		credits
Courses in the major field	Required courses include applied composition, six credits; composition recital and document, five credits	11
Supportive courses in music	MHIS 611-612 Analysis, four credits; APPM 575-576 Score Reading, two credits; MHIS 690 Bibliography and Research, two credits; music history, two credits; MHIS 615 Seminar in Theory, two credits	12
Approved electives	Recommended electives include advanced orchestration, performance, ensembles	7
Total credits		30

Master of music (music education)		credits
Courses in major field	Seminar in Music Education, three credits; MUED 620 Research in Music Education, three credits; thesis, recital or project*, zero to three credits	6-9
Supportive courses in music	MHIS 611-612 Analysis, four credits; music history elective, two credits; music electives selected from performance, conducting, MHIS 690 Bibliography and Research, ensembles, or other APPM, MUSC or MHIS courses approved by the adviser which meet the needs and/or goals of the individual student, four credits	10
Electives	MUED 583, MUED 591 and other areas related to the student's interest area; also may be selected from outside the Department of Music*	11-14
Total credits		30

+ In lieu of thesis, recital or project, a student may choose to complete the master of music (education) degree with three credits from the elective category.

\* Students planning to pursue doctoral study are strongly encouraged to complete EDUS 662 Educational Measurement and Evaluation.

## Graduate courses in performance (APPM)

### APPM 571 Choral Pedagogy

Semester course; 3 lecture hours. 3 credits. Teaching competencies relative to the choral training and use of the unchanged, changing and matured voice will be stressed. Included are consideration of vocal production, pronunciation, aural skills, reading skills and stylistic interpretation.

### APPM 575-576 Score Reading

Continuous course; 2 laboratory hours. 1-1 credit. Prerequisite: APPM 274 or the equivalent. No degree credit for graduate composition majors. A progressive course in reducing scores at the keyboard, beginning with simple choral scores and progressing to full orchestra and band.

### APPM 585 Opera Theatre

Semester course; 1 lecture and 4 studio hours. 2 credits. May be repeated up to four times for credit. Prerequisite: Permission of instructor. Explores aspects of opera through study, written research and fully staged public performances of operatic scenes and/or one-act operas.

### APPM 600-Level Private Instruction: Principal and Secondary Performing Mediums

Semester courses; one half-hour or 1 hour private lessons per week. 1 to 3 credits. Repeatable without limitations. One hour practice daily for each credit. To register for any private lesson, students must obtain a specific course number in Room 132, Performing Arts Center, or at the music table during in-person registration; music majors must consult their advisers. Extra fee required. Lessons are available in the following areas: bassoon, carillon (one credit only), cello, clarinet, conducting, composition, double bass, drum set, euphonium, flute, French horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, synthesizer, trombone, trumpet, tuba, viola, violin, vocal coaching and voice.

### APPM 663 Advanced Pedagogy

Semester course; 3 lecture hours. 3 credits. Further study in pedagogical systems and techniques with emphasis on materials for intermediate and advanced-level students. Studio observation will be included. Sections: (1) piano, (2) voice, (3) organ, (4) percussion, (5) brass, (6) woodwinds and (7) strings.

### APPM 670 Large Ensembles

Semester course; 3 or 4.5 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to six times for credit. Auditions required for sections 1, 3, and 4. Sections: (1) orchestra, (2) University band, (3) symphonic band, (4) chorus and (5) Choral Arts Society.

### APPM 671 Piano Technique Seminar

Semester course; 1 lecture hour. 1 credit. Physiology of piano playing. Alternative approaches to building and reconstructing technique.

### APPM 673, 674 Piano Literature and Performance Practice

Semester course; 2 lecture hours. 2, 2 credits. To familiarize the student with a broad repertoire of performing and teaching material. Discussion of approaches to styles and idioms of various periods, solution of technical and musical problems encountered in specific pieces, evaluation of various editions of piano literature.

### **APPM 675 Teaching Practicum**

Semester course; 2 lecture hours. 2 credits. A semester of supervised studio teaching consisting of intermediate and advanced piano literature.

### **APPM 681 Group Piano Methods and Management**

Semester course; 2 lecture hours. 2 credits. Management, methods and materials for group teaching. Includes beginning students of all ages, intermediate level students and college keyboard skills classes.

### **APPM 690 Small Ensembles**

Semester course; 2 or 3 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to six times for credit. Auditions required for all sections. Sections: (1) ensemble for new music, (2) the madrigalists, (3) collegium musicum, (4) women's chorus, (5) vocal ensembles, (6) piano ensembles, (7) accompanying, (8) percussion ensemble, (9) percussion lab ensemble, (10) woodwind ensembles, (11) brass ensembles, (12) chamber orchestra, (13) string ensemble, (14) guitar ensembles, (15) small jazz ensembles, (16) jazz orchestra I, (17) jazz orchestra II, (18) jazz orchestra III, (19) basketball pep band.

### **APPM 799 Recital or Lecture Recital**

Semester course; 1, 3 or 6 credits. Public presentation of a full recital or lecture recital. Content to be approved by graduate committee. Graded as "S," "U" or "F."

## **Graduate courses in music composition (MUSC)**

### **MUSC 611-612 Analysis for Performance and Composition**

Continuous course; 2 lecture hours. 2 credits. Analysis of the organization, combination, and manipulation of elements devices of music from the 18th century to the present with demonstration of this knowledge through performance.

### **MUSC 620 Composition Seminar**

Semester course; 2 lecture hours. 2 credits. May be repeated up to four times for credit. Discussion, analysis, and criticism of selected compositions pertinent to the improvement of student skills and understanding.

## **Graduate courses in music history (MHIS)**

### **MHIS 513 Arranging**

Semester course; 3 lecture hours. 3 credits. Practical, technical, and conceptual considerations of arranging and transcribing for vocal and instrumental groups will be explored. Students will demonstrate competence in these creative areas to the optimum level of school and/or church music organizations.

### **MHIS 551-552 Orchestral Repertoire**

Semester courses; 1 lecture hour or 1 lecture and 2 laboratory hours. 1 or 2 credits. Performance and study of selected major symphonic works from historical, analytical, and stylistic perspectives. Research reports will include comparisons of interpretations. Repertoire will consist of basic audition pieces selected by orchestras. Laboratory sessions will utilize available instrumentation for performance.

### **MHIS 566 Jazz History and Analysis**

Semester course; 3 lecture hours. 3 credits. An examination of the evolution of jazz from its beginnings through the Swing Era. Students will transcribe and analyze improvised solos and compositions by the tradition's principal innovators.

### **MHIS 591 Topics in Music**

Semester course; variable; 1-3 credits. May be repeated for a maximum of nine credits. Flexible term courses in selected aspects of music performance, theory, literature, or history. See the Schedule of Classes for specific topic to be offered each semester.

### **MHIS 592, 692 Individual Project**

Semester courses; 1-6 credits. Prerequisites: Permission of supervising faculty member, adviser, and department chair. Open only to degree-seeking graduate students in music. Individual work in an area not otherwise available to the student.

### **MHIS 615 Seminar in Music Theory**

Semester course; 2 lecture hours. 2 credits. May be repeated up to four times with different topics. Not offered every year. Topical discussions and relevant research appropriate to the principal eras of music development.

### **MHIS 650 Seminar in Music History**

Semester course; 2 lecture hours. 2 credits. May be repeated up to four times with different topics. Prerequisite: MHIS 690. An intensive study of a limited phase or segment of music history through examination of relevant materials and extended class discussion.

### **MHIS 666 20th Century Music**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Impressionistic, expressionistic, neoclassic, and neoromantic influences and styles of music. Development of new sound-generating techniques and methods for ordering the new tonal materials.

### **MHIS 667 Music of the Middle Ages and the Renaissance**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Principal musical developments from the first through the 16th centuries. Sacred and secular monophonic, homophonic, and polyphonic forms and styles; the development of instrumental idioms and forms.

### **MHIS 668 Music of the Baroque**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Principal developments, c. 1590-1750; accompanied monody and the beginning of opera; forms and styles of sacred and secular compositions.

### **MHIS 669 Music of Rococo and Classical Eras**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Major development in sacred and secular forms and styles, c. 1730-1828; social and artistic influences on music; dominance of instrumental music; Mozart, Beethoven, and the German Symphony.

### **MHIS 670 Music of the Romantic Era**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Influence of the Romantic Era on concepts of musical forms and styles;

the development of the art song, the growth of opera, the exploitation of instruments and tonality.

### **MHIS 690 Bibliography and Methods of Research**

Semester course; 2 lecture hours. 2 credits. Offered yearly, fall semester. A course to introduce graduate students to the chief bibliographic materials in music and music education to help develop skills of research and writing necessary to produce a thesis or other formal research paper.

### **MHIS 798 Research Project**

Semester course; 2 credits. Corequisite: APPM 799. Final research or expository document for performance and composition majors. Content to be approved by graduate committee.

## **Graduate courses in music education (MUED)**

### **MUED 583 Special Workshop in Music Education**

Semester course; 0.5-3 credits. Flexible term courses on selected aspects of music education. See the Schedule of Classes for specific offerings each term.

### **MUED 591 Topics in Music Education**

Semester course; variable credits from 1-3; may be repeated for a maximum of six credits with different topics. Flexible semester courses in selected topics in music education philosophy, curriculum, integrated and interdisciplinary arts, technology and selected topics of current interest or needs relative to music education. See the Schedule of Classes for specific topic to be offered each semester.

### **MUED 600 Seminar in Music Education**

Semester course; 3 lecture hours. 3 credits; may be repeated up to two times with different topics. Investigation of contemporary issues and problems in music education. Students will present oral reports and written papers, which explore new directions and implications for music educators and music education programs.

### **MUED 620 Introduction to Research in Music Education**

Semester course; 3 lecture hours. 3 credits. Development of fundamental skills necessary to understand and evaluate research in music education. Focuses on the basic principles, concepts and techniques of research methodology applied specifically to music education. Includes introduction to quantitative, qualitative, ethnographic and historical methodology.

### **MUED 676 School Music Supervision and Administration**

Semester course; 2 lecture hours. 2 credits. The study of the organization, curriculum, course content, administration, and personnel problems in public school music.

### **MUED 799 Thesis**

Semester course; 1-3 credits. May be repeated. Prerequisite: Permission of the music education coordinator. Preparation of a thesis based on independent research.

## Department of Theatre

Anderson, Aaron, Assistant Professor  
M.F.A. University of Hawaii  
Movement, voice.

Barnes-McLain, Noreen, Associate Professor  
Ph.D. Tufts University  
Theatre history, pedagogy.

Hopper, Elizabeth, Associate Professor  
M.F.A. University of Wisconsin–Madison  
Costume design.

Hopper, Gary, Associate Professor  
M.F.A. Boston University  
Acting.

Keller, Ronald E., Associate Professor  
M.F.A. University of Massachusetts, Amherst  
Set design.

Leong, David, Professor and Department Chair  
M.F.A. University of North Carolina at Greensboro  
Stage movement.

Rodgers, Janet B., Associate Professor  
M.F.A. Brandeis University  
Voice and speech for the stage.

Sims, Marvin L., Associate Professor  
M.F.A. Southern Illinois University at Carbondale  
Acting, directing.

Szari, Louis J., Associate Professor  
M.F.A. University of Texas  
Technical theatre.

Toscan, Richard E., Professor and Dean  
Ph.D. University of Illinois  
Theatre history and literature.

The Department of Theatre offers intensive master of fine arts degree programs in two tracks, the professional theatre degree track and the theatre pedagogy degree track. The professional degree program, realized in cooperation with TheatreVirginia, a constituent member of the League of Resident Theatres, provides graduate students with the educational and professional foundations essential to attaining the highest standards in the art of the theatre. The program prepares actors, directors and designers for careers in regional repertory theatre and commercial production companies throughout the United States. The next professional degree class will be admitted in 2004. The M.F.A. in Theatre Pedagogy Program is individually tailored to prepare the student to enter the field of teaching at the university or college level. Areas of concentration can be chosen from acting, directing, scene design, costume design, voice and speech for the stage, physical acting/stage combat, or theatre history, literature and dramatic criticism.

Applicants are admitted only upon satisfactory demonstration of ability and genuine interest through audition or portfolio presentation, interview, evidence of scholarly writing (essay or research paper) and a

minimum 3.0 GPA. The demands of the program are stringent; and only those students who are willing to commit themselves to the work assigned and who are capable of observing strict professional discipline should apply.

The master of fine arts program is based on the philosophy that the nature of theatre requires the creative collaboration of all theatre artists working together. All share the responsibility of solving problems related to planning, preparation and realization of productions.

The master of fine arts curriculum consists of an intensive program of related practical and theoretical studies. The student electing the professional degree track may expect to accomplish much of the degree in close association with TheatreVirginia as an active participant in its program. TheatreVirginia regularly engages members of Actors' Equity Association, the Society of Stage Directors and Choreographers, and United Scenic Artists.

### Admissions requirements – M.F.A.

In addition to the School of the Arts admission requirements, applicants in theatre must have completed a minimum of 30 semester hour credits in theatre at the undergraduate level. Professional experience will be considered.

An audition or presentation of portfolio is required in addition to a personal interview which the applicant must arrange with the Department of Theatre's graduate studies adviser.

### Special admissions requirements – professional tracks

#### Acting and directing

Applicants for acting and directing must present upon entrance at least six credit hours of undergraduate production or technical theatre course credit or the equivalent in professional experience.

#### Design

Applicants in costume and stage design must present upon entrance at least six credit hours of undergraduate performance course credit or the equivalent in professional experience.

### Special admissions requirements – theatre pedagogy track

Applicants in theatre pedagogy must present upon entrance at least three credit

hours of undergraduate design or technical theatre or the equivalent in professional experience.

Deficiencies in any of these special admissions requirements may be satisfied at VCU, but no graduate credit will be given for them. These prerequisites must be satisfied before the student may apply for candidacy.

### Candidacy

After the completion of 15 and before the completion of 24 semester hours, or one full academic year, whichever comes first, the student seeking an advanced degree from the Department of Theatre must apply for candidacy. In addition to maintaining a minimum 3.0 GPA, prior to applying for candidacy, candidates for the professional degree focus options in **acting** must have completed two roles, at least one with a faculty director (this requirement may be completed in part by the acting practicum required during the first year of matriculation); in **directing** must have completed one directing assignment (which may be an assistant to the director assignment and which may be accomplished in the directing practicum required during the first year of matriculation); in **scene design** must have served in a design position of substantial authority for at least one production (which may be accomplished in the scene design practicum during the first year of matriculation); in **costume design** must have completed two costume design classes and served in a position of designated authority (which position may be accomplished in the costume design practicum during the first year of matriculation). Candidates for the **theatre pedagogy** degree must have completed one assignment as well as completed the theatre pedagogy practicum in classroom observations.

In addition to the requirements listed previously for the various area specialties, the process of evaluation for advancement to candidacy may require the presentation of a portfolio and/or audition; written, oral, and/or practical testing; and other devices deemed by the Department of Theatre to be serviceable measurements to determine the prospective success of the candidate at the advanced level in the program. Each candidate for the master of fine arts in theatre may stand for evaluation for admission to candidacy a second time if the initial evaluation for candidacy is unsuccessful. If after the second evaluation the student is denied candidacy, he or she is obliged to withdraw from the program. In special cir-

cumstances where unusual strength in another area is evidenced and when the student is acceptable to the graduate faculty, the student may be invited to transfer into another degree option. The completion of 18 semester hours is the latest point at which a student may transfer into another degree option without lost credits.

## Degree requirements – M.F.A.

### Core requirements

Candidates in all degree track options for the M.F.A. in Theatre must satisfy the following core requirements:

	credits
THEA 509, 510, 603, 604	12
Two courses from the following:	
THEA 623, 624 (selected topics in dramatic literature) and THEA 791 (Seminar)*	6
Creative project/Thesis	6

\* Seminar subjects may include dramaturgy, African-American theatre, women's theatre, history of Shakespearean production, Asian theatre practice, political theatre, research/performance or other topics.

### Program track requirements – Professional track Theatre

<b>Professional studio: Acting</b>	Total 60
To be repeated six times for a total of 60 credits	
Program includes:	
Acting	
Voice	
Physical acting	
Practicums	
Professional internships	
Core	
Project and project evaluation	

<b>Professional studio: Directing</b>	Total 60
To be repeated six times for a total of 60 credits	
Program includes:	
Directing	
Minor	
Electives	
Practicums	
Professional internships	
Core	
Project and project evaluation	

<b>Professional studio: Costume design</b>	Total 60
To be repeated six times for a total of 60 credits	
Program includes:	
Costume design	
Costume history	
Rendering	
Computer drafting	
Scene design	
Scene painting	
Practicums	

<b>Professional studio: Scene design</b>	Total 60
To be repeated six times for a total of 60 credits	

Program includes:  
Stage design  
Scene painting  
Costume design or lighting design  
Directing  
Computer drafting  
History of interior design and architecture  
Practicums  
Professional internships  
Core  
Project and project evaluation

### Program track requirements – Theatre pedagogy track

<b>Theatre pedagogy</b>	Total 60
Program includes:	
Directing, acting, voice or physical acting, 12 credits	
Elective, including design, 12 credits	
Core, 27 credits (includes Theatre Pedagogy)	
Internship, 12 credits	

Theatre pedagogy candidates select a major area specialty, present a minor in either acting, directing or literature, as well as participate in practicum situations both in the department and at TheatreVirginia.

## Graduate courses in theatre (THEA)

**THEA 501, 502 Stage Voice and Speech**  
Semester course; 3, 3 credits. May be repeated with permission of instructor. Provides advanced work on breathing, support and projection of the voice with application to the demands of classical texts and/or dialects.

**THEA 505 Advanced Scene Design III**  
Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: THEA 306 and permission of instructor. Intensive study of the professional standards and practices expected of scene designers.

**THEA 506 Advanced Scene Design IV**  
Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: THEA 505 and permission of instructor. Continued intensive study of the professional standards and practices expected of scene designers.

**THEA 508 Scene Painting**  
Semester course; 10 studio hours. 3 credits. May be repeated with permission of instructor for up to 12 credits. Study of the materials and techniques of scenic painting as well as the practices and expectations of those pursuing careers as scenic artists.

**THEA 509 Theatre History**  
Semester course; 3 lecture hours. 3 credits. Study of modern theatre practice, dramatic literature and theory from the development of naturalism through the late 20th century.

**THEA 510 Theatre Historiography**  
Semester course; 3 lecture hours. 3 credits. Study of how theatre history is documented and researched, and the theoretical perspectives that inform its writing.

**THEA 513-514 Acting Styles**  
Continuous course; 6 studio hours. 3-3 credits. Prerequisite: Permission of instructor. Open only to theatre majors upon satisfactory audition. A study of the

history and theory of acting styles from the Greeks to the present.

**THEA 517 Physical Acting**  
Semester course; may be repeated for a total of 12 credits. Prerequisite: Permission of instructor. Exploration and discovery of the principles of movement and their practical application to the stage. Emphasis on character development, solo and group scene work, physical comedy, and stage combat.

**THEA 519 Theatre Pedagogy**  
Semester course; 3 lecture hours. 3 credits. Theory and practice in the teaching of college-level theatre.

**THEA 593 Professional Internship**  
Semester course; 3-9 credits. May be repeated. Prerequisite: Permission of department chair. Majors only. A practicum in theatre conducted in cooperation with selected professional or semiprofessional theatre organizations.

**THEA 603 Dramatic Literature and Theory**  
Semester course; 3 lecture hours. 3 credits. Multicultural study of selected plays in the history of dramatic literature, criticism and theory.

**THEA 604 Modern Theatre: Theory and Practice**  
Semester course; 3 lecture hours. 3 credits. Seminar in the performance practices, texts and theories that have shaped the theatre throughout the 20th century.

**THEA 605-606 Advanced Studies in Stage Design**  
Continuous course; 1 lecture and 4 studio hours. 3-3 credits. Prerequisite: Permission of instructor. An advanced study in specific problems in stage design.

**THEA 607 Problems in Scenic Techniques**  
Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced, detailed study of selected problems in contemporary theory and practice of scenic technique.

**THEA 609 Seminar in Production Process**  
Semester course; 1 lecture and 4 laboratory hours. 3 credits. May be repeated with a change of topic for a maximum of nine credits. Students and faculty in design, technical theatre, and performance working together in studio situations to identify and solve problems relating to the planning, preparation, and realization of productions.

**THEA 613 Advanced Problems in Acting**  
Semester course; 3 credits. May be repeated with permission of instructor. Focus on acting problems related to the actor's needs to develop proficiency in craft areas.

**THEA 621, 622 Problems in Costume Design**  
Semester courses; 2 lecture and 2 studio hours. 3, 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced study in specific problems in costume design.

**THEA 623, 624 Advanced Studies in Modern Drama**  
Semester course; 3 lecture hours. 3, 3 credits. Intensive, detailed studies of selected subjects in major 19th- and 20th-century drama.

**THEA 630 Production**  
Semester course; 6 laboratory hours. 3 credits. May be repeated. The design, rehearsal, and performance of dramatic works.

**THEA 640, 641 Advanced Theatre Projects**

Semester course; 1 or 2 lecture and 4 or 8 laboratory hours. 3 or 6 credits per semester. May be repeated. Individual or group projects in acting, directing, costume design, stage design, or dramaturgy.

**THEA 651 Advanced Design Studio**

Semester course; 1 lecture and 4 laboratory hours. May be repeated. Intensive individual training in design and presentation processes as they apply to contemporary professional production.

**THEA 661, 662 Problems in Stage Directing**

Semester courses; 3 lecture hours. 3, 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced, detailed study of selected aspects of directing techniques for the stage.

**THEA 693 Colloquium and Practical Training**

Semester course; 2 lecture and 2 studio hours. 3 credits. May be repeated for a maximum of 12 credits. Literary, historical, and theoretical studies together with specialized voice and movement training related to dramatic works in production.

**THEA 694 Theatre Pedagogy Professional Internship**

Semester course; 1, 3 lecture hours. 1, 3, 6 credits. May be repeated. Prerequisites: THEA 519 and permission of the graduate adviser in theatre. Research, design, and either implementation or thoroughly planned implementation of a curricular research and development project of relevance to a formal speech and/or theatre pedagogy program.

**THEA 697 Research and Special Problems in Theatre**

Semester course; 1, 3 credits. May be repeated with permission of graduate adviser. Individually directed study and research under faculty supervision on approved research problems or projects in theatre.

**THEA 698 Creative Project**

Semester course; 3 credits. Provides the culminating performance or design experience in the student's degree emphasis. Adjudicated by the faculty.

**THEA 699 Creative Project Evaluation**

Semester course; 3 credits. Provides the student in acting, directing, costume design, and stage design the opportunity to document and evaluate the creative project. Defended before a committee of the faculty.

**THEA 791 Seminar in Special Issues in Theatre**

Semester course; variable; 1-3 credits per semester. May be repeated for a maximum of nine credits. Prerequisite: Permission of instructor. An advanced, detailed study of selected, contemporary issues not included in the regular curriculum. See the Schedule of Classes for specific subjects to be offered each semester.

**THEA 799 Thesis**

Semester course; 1-6 credits. May be repeated. Prerequisite: Permission of the department graduate studies adviser and department chair. Preparation of a thesis based on independent research.



# School of Business

## Graduate Programs

Virginia Commonwealth University's School of Business can be traced back to 1917 when a board of private citizens organized the Richmond School of Social Economy for Social Workers and Public Health Nurses. By 1937 the school was called the Richmond Professional Institute, was affiliated with The College of William and Mary, and had added business courses to the curriculum. The school began offering a graduate program in 1962. Since then, the program has continued to develop and mature to meet the needs of the future.

### Degree programs

The School of Business offers degree programs leading to the master of arts in economics, master of accountancy, master of business administration, master of business administration/master of science in information systems, master of science in business, master of science in information systems, master of taxation, and the Ph.D. in business and Pharm.D./M.B.A.

### Post-baccalaureate Graduate Certificate in Real Estate and Land Development

The School of Business offers a post-baccalaureate graduate certificate in real estate

and land development. This program is offered both on campus and via the Internet.

### Post-baccalaureate undergraduate certificate programs

The School of Business offers post-baccalaureate undergraduate certificates in accounting, human resource management, information systems, marketing, and real estate and land development.

### Enrollment in graduate courses

Because of accreditation policies, students may not enroll in any graduate business courses (except MGMT 500) for credit without first being admitted formally to a graduate degree or graduate certificate program.

Exceptions may be granted by the director of graduate programs in business to students with superior academic records. No credit will be given for graduate classes taken prior to acceptance into a graduate degree program in business or economics unless such an exception has been granted. A form to request such an exception is available from the Graduate Studies in Business Office.

A "graduate transient" classification may be granted to a student in good standing in any AACSB (The Association to Advance

**1015 Floyd Ave. • P.O. Box 844000**  
**Richmond, VA 23284-4000**  
**(804) 828-1595 • Fax (804) 828-8884**  
<http://www.bus.vcu.edu>

#### Michael Sesnowitz

Dean  
 B.A., M.A., Ph.D.

#### E. G. Miller

Senior Associate Dean  
 B.S., M.C.P., Ph.D.

#### Allen S. Lee

Associate Dean for Research and Graduate Studies  
 B.S., M.C.P., Ph.D.

#### Walter S. Griggs Jr.

Associate Dean for Undergraduate Studies  
 M.H., J.D., Ed.D.

#### Charles J. Gallagher

Associate Dean for External Affairs  
 B.S., Ph.D.

#### Ruth W. Epps

Chair, Department of Accounting  
 B.S., M.S., M.Acc., Ph.D.

#### David E. Upton

Chair, Department of Finance, Insurance and Real Estate  
 B.A., M.B.A., Ph.D., CFA

#### Glenn H. Gilbreath

Chair, Department of Management  
 B.S., M.A., Ph.D.

#### Edward L. Millner

Chair, Department of Economics  
 B.A., Ph.D.

#### Richard T. Redmond

Chair, Department of Information Systems  
 B.S., Ph.D.

#### Frank Franzak

Chair, Department of Marketing and Business Law  
 B.S., M.B.A., Ph.D.

#### Tracy S. Green

Director of Graduate Programs  
 B.S., M.Ed.

#### William J. Miller

Director, Fast Track Executive M.B.A.  
 B.S., M.B.A.

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Collegiate Schools of Business)-recognized graduate school who desires to enroll in the School of Business for any one semester or summer session. Students will be required to present certificates of graduate standing but will not have to submit the data normally required for an admission decision. A form is available from Graduate Studies in Business Office to facilitate transient enrollment.

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### Transfer credit

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A maximum of six semester hours of acceptable graduate credit earned in a degree program at an AACSB-accredited institution may be transferred and applied toward the graduate degree. Acceptance of transfer credit is made at the discretion of the director of graduate programs in business.

All transfer work must be at the "A" or "B" grade level. Students must be in good standing both at VCU and at the institution from which the credits were earned. Additionally, students must have had full admission during the time these credits were earned at that college or university. Transfer credit shall not be older than seven years at the time the degree is awarded.

Credit to be earned at other institutions after acceptance in the graduate program must be approved in advance, and approval is granted at the discretion of the director of graduate programs in business. Such work is approved only under unusual circumstances such as job transfers or other extenuating circumstances.

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### Advising program

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All students admitted to graduate programs are assigned advisers. Students are expected to work with their advisers to plan their graduate programs. Each student is required to complete an approved program form and file it with the Graduate Studies in Business Office no later than the end of the first semester in which the student is admitted. The curriculum plan described on the form must be approved by both the adviser and the director of graduate programs in business. Courses taken without approval are taken at the student's own risk.

Students are responsible for knowing and fulfilling all general and specific requirements relating to the completion of their degree programs. Answers to specific questions may be obtained from the Graduate Studies in Business Office, (804) 828-4622.

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### Change in program or concentrations

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Students who desire to change their graduate programs or areas of concentration within the school must make that request in writing to the director of graduate programs in business. The director will advise them of the necessary requirements and whether the change is possible. The student must be in good standing at the time of change.

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### Notification

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The student should notify in writing both Records and Registration and Graduate Studies in Business, 1015 Floyd Ave., P.O. Box 844000, Richmond, VA 23284-4000, of any address changes. Students who do not wish to register in any given semester must notify in writing the Graduate Studies in Business Office of their intent not to register and their plans for continuation in the program.

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### Student appeals

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Appeals for exceptions to policies or academic standards may be made in writing to Graduate Studies in Business Office, School of Business, Virginia Commonwealth University, 1015 Floyd Ave., Richmond, VA 23284-4000, or by calling (804) 828-4622.

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### Individual research projects

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Various opportunities exist for students to work closely with faculty on individual re-search projects. Courses in the School of Business numbered 690, 693, and 697 are suitable for this purpose. No more than one research course may be taken as part of a program.

Registration in all research courses requires approval of both the student's adviser and the director of graduate programs in business. Forms for this purpose are available upon request from the Graduate Studies in Business Office. Students are expected to seek permission to register in research courses by the end of the semester or summer session preceding the semester or summer session for which registration is desired. The written research report is required to be filed at the Graduate Studies in Business Office no later than the last day of classes of the semester or summer session in which the course is taken.

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### Financial aid

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The School of Business offers a limited number of graduate assistantships to full-time students for the academic year. For further information, write to the Graduate Studies in Business Office.

Graduate students also are eligible for funds administered under the National Defense Loan and college work-study programs. For further information, write to Director of Financial Aid, Virginia Commonwealth University, Richmond, VA 23284-2526.

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### Graduate faculty

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- Ackley, R. Jon, Associate Professor  
Ed.D. Utah State University  
Administrative systems management and organizational communication.
- Aiken, Peter, Associate Professor  
Ph.D. George Mason University  
Information systems.
- Andrews, Robert L., Associate Professor  
Ph.D. Virginia Polytechnic Institute and State University  
Decision sciences.
- Bae, Benjamin, Assistant Professor  
Ph.D., Temple University  
Accounting.
- Baranoff, Etti, Associate Professor  
Ph.D. University of Texas  
Finance and insurance.
- Barker, Randolph T., Professor  
Ph.D. Florida State University  
Management.
- Blanks, Edwin E., Associate Professor and Vice Provost for Academic Administration  
M.S. Virginia Commonwealth University  
Information systems.
- Bowman, John H., Professor  
Ph.D. Ohio State University  
Economics.
- Bryson, Kweku-Muata (Noel), Professor  
Ph.D. University of Maryland at College Park  
Information systems.
- Byles, Charles M., Associate Professor  
D.B.A. Kent State University  
Management.
- Canavos, George C., Professor  
Ph.D. Virginia Polytechnic Institute and State University  
Decision sciences.
- Chin, Amita, Associate Professor  
Ph.D. University of Maryland  
Information science.
- Coffman, Edward N., Professor  
D.B.A. George Washington University  
Accounting.

- Coppins, Richard J., Associate Professor  
Ph.D. North Carolina State University  
Information systems.
- Cowles, Deborah L., Associate Professor  
Ph.D. Arizona State University  
Marketing.
- Daniels, Kenneth N., Associate Professor  
Ph.D. University of Connecticut  
Finance.
- Davis, Douglas D., Professor  
Ph.D. Indiana University  
Economics.
- Dhillon, Gurpreet, Associate Professor  
Ph.D. London School of Economics and  
Political Science  
Information systems.
- Dubofsky, David A., Professor  
Ph.D. University of Washington, CFA  
Finance.
- Edmunds, Wayne L., Associate Professor  
M.L. and T. College of William and Mary, C.P.A.  
Accounting.
- Epps, Ruth W., Professor and Chair, Department of  
Accounting  
Ph.D. Virginia Commonwealth University, C.P.A.  
Accounting.
- Everett, John O., Professor  
Ph.D. Oklahoma State University, C.P.A.  
Accounting.
- Ferguson, Jerry T., Professor  
Ph.D. University of Florida  
Real estate.
- Franzak, Frank J., Associate Professor and Chair,  
Department of Marketing and Business Law  
Ph.D. University of Maryland  
Marketing.
- Fuhs, Paul, Assistant Professor  
Ph.D. University of Massachusetts  
Management of information systems.
- Gilbreath, Glenn H., Professor and Chair, Department  
of Management  
Ph.D. University of Alabama  
Decision sciences.
- Gray, George R., Associate Professor  
Ph.D. University of Alabama  
Human resource management and industrial  
relations.
- Harless, David W., Associate Professor  
Ph.D. Indiana University  
Economics.
- Hoffer, George E., Professor  
Ph.D. University of Virginia  
Economics.
- Holley, Charles L., Professor  
D.B.A. University of Tennessee, C.P.A.  
Accounting.
- Humphrey, Ronald, Associate Professor  
Ph.D. University of Michigan  
Management.
- Johnson, Iris W., Associate Professor  
Ed.D. Virginia Polytechnic Institute and State  
University  
Office automation management.
- Kasper, George, Professor  
Ph.D. State University of New York at Buffalo  
Management information systems.
- Kiecker, Pamela, Professor  
Ph.D. University of Colorado  
Marketing.
- Kurtulus, Ibrahim, Associate Professor  
Ph.D. University of North Carolina Business School  
Operations and quantitative management.
- Lee, Allen S., Professor and Associate Dean for  
Research and Graduate Studies  
Ph.D. Massachusetts Institute of Technology  
Information systems.
- Lehr, Carol, Assistant Professor  
Ph.D. Pennsylvania State University  
Economics.
- Little, Michael W., Associate Professor  
Ph.D. Michigan State University  
Marketing.
- McDaniel, Michael A., Professor  
Ph.D. George Washington University  
Organizational behavior.
- McDermott, Dennis R., Associate Professor  
Ph.D. Ohio State University  
Marketing.
- McDonald, R. Michael, Associate Professor  
Virginia Polytechnic Institute and State University  
Risk control management and HRD.
- Miller, Don M., Associate Professor  
Ph.D. Virginia Polytechnic Institute and State  
University  
Decision sciences.
- Miller, E. G., Associate Professor and Senior Associate  
Dean  
Ph.D. University of Alabama, C.L.U., C.P.C.U.  
Management science and insurance.
- Miller, Marianne, Associate Professor  
Ph.D. University of Oregon  
Human resource management and industrial  
relations.
- Millner, Edward L., Professor and Chair, Department of  
Economics  
Ph.D. University of North Carolina  
Economics.
- Minor III, Elliott D., Associate Professor  
Ph.D. University of South Carolina  
Management operations.
- Mitchell, Shannon K., Associate Professor  
Ph.D. University of Virginia  
Economics.
- Murphy, Neil B., Professor  
Ph.D. University of Illinois, C.C.M.  
Finance.
- Myers, Donald W., Professor  
D.B.A. Georgia State University  
Human resource management.
- Myers, Phyllis S., Associate Professor and Director,  
Insurance Studies Center  
Ph.D. University of South Carolina, C.L.U.  
Finance and insurance.
- Narula, Subhash C., Professor  
Ph.D. University of Iowa  
Decision sciences.
- Nowlin, Tanya S., Assistant Professor  
Ph.D. Louisiana University, C.P.A.  
Accounting.
- Ngwenyama, Ojelanki, Professor  
Ph.D. State University of New York at Binghamton  
Computer science and information systems.
- Olds, Philip R., Associate Professor  
Ph.D. Georgia State University, C.P.A.  
Accounting.
- O'Toole, Dennis M., Associate Professor  
Ph.D. Ohio University  
Economics.
- Pearce, C. Glenn, Associate Professor  
Ph.D. Georgia State University  
Management.
- Peterson, Steven P., Associate Professor  
Ph.D. Indiana University  
Economics.
- Phillips, Richard A., Associate Professor  
Ph.D. University of North Carolina  
Real estate.
- Pitts, Michael W., Associate Professor  
D.B.A. University of Tennessee  
Management.
- Ramirez, Gabriel G., Professor  
Ph.D. Georgia State University  
Finance.
- Rasnic, Carol, Professor  
J.D. Vanderbilt University  
Business law.
- Redmond, Richard T., Associate Professor and Chair,  
Department of Information Systems  
D.B.A. Kent State University  
Decision science.
- Reilly, Robert J., Professor  
Ph.D. University of Tennessee  
Economics.
- Rimler, George W., Professor  
Ph.D. Georgia State University  
Management.
- Salandro, Daniel P., Associate Professor  
Ph.D. University of Pittsburgh  
Finance.
- Seers, Anson, Professor  
Ph.D. University of Cincinnati  
Organizational behavior.
- Sesnowitz, Michael, Professor and Dean  
Ph.D. University of Pittsburgh  
Public finance, demographic economics, interna-  
tional trade and finance.
- Shin, Tai S., Professor  
Ph.D. University of Illinois  
Finance.
- Sleeth, Randall G., Associate Professor  
Ph.D. University of Massachusetts  
Management.
- Smith, Charles H., Associate Professor  
Ph.D. University of Maryland  
Decision sciences.
- Spede, Edward C., Associate Professor  
Ph.D. Virginia Polytechnic Institute and State  
University  
Accounting.

Spindle, Roxanne, Associate Professor  
Ph.D. University of Colorado, C.P.A.  
Accounting.

Spinelli, Michael, Associate Professor  
Ph.D. West Virginia University  
Decision sciences.

Strand, Carolyn A.  
Ph.D. Texas A&M, C.P.A.  
Accounting systems and managerial accounting.

Stratton, Leslie, Associate Professor  
Ph.D. Massachusetts Institute of Technology  
Economics.

Sutherland, John W., Professor  
Ph.D. University of California at Los Angeles  
System science.

Tondkar, Rasoul H., Professor  
Ph.D. University of North Texas  
Accounting.

Trumble, Robert R., Professor  
Ph.D. University of Minnesota  
Industrial relations, organization theory and economics.

Upton, David E., Professor and Chair, Department of  
Finance, Insurance and Real Estate  
Ph.D. University of North Carolina, C.F.A.  
Finance.

Urban, David J., Professor  
Ph.D. University of Michigan  
Marketing.

Vijayakumur, Jayaraman, Assistant Professor  
Ph.D. University of Pittsburgh  
Accounting.

Weistroffer, Heinz R., Associate Professor  
Ph.D. Free University of Berlin  
Mathematics.

Wetzel, James N., Professor  
Ph.D. University of North Carolina  
Economics.

Wier, Benson, Associate Professor  
Ph.D. Texas Tech University, C.P.A.  
Accounting.

Williams, Larry, Professor  
Ph.D. Indiana University  
Organizational behavior.

Williams, Margaret, Associate Professor  
Ph.D. Indiana University  
Organizational behavior and human resource management.

Wijnholds, Heiko de B., Associate Professor  
D.Com. University of South Africa  
Marketing strategy and international marketing.

Wood Jr., D. Robley, Professor  
D.B.A. University of Tennessee  
Management.

Wood, Van R., Professor and Philip Morris Chair of  
International Business  
Ph.D. University of Oregon  
International business.

Wynne, A.J., Associate Professor  
Ph.D. University of Nebraska  
Decision science.

## General requirements for master's degrees in the School of Business

In addition to the general academic regulations stated in the Graduate Studies at VCU chapter of this bulletin and the regulations listed earlier in this section, master's students in the School of Business are subject to the following requirements:

1. A course for which a passing grade was received cannot be repeated without prior written permission of the director of graduate programs in business. An appeal to the School of Business Master's Committee is required.
2. Students who satisfy all requirements except the 3.0 average may be allowed to take a maximum of six additional credit hours to raise the average. Students are required to appeal to the School of Business Master's Committee for permission.
3. A foundation course may be waived by the director of graduate programs in business, based on satisfactory completion of equivalent undergraduate work prior to acceptance in the program. CLEP credit at the "B" or higher level may be accepted in lieu of foundation courses with permission. The waiver of courses is at the discretion of the School of Business.
4. A maximum of two one-year extensions may be granted by the director of graduate programs in business in the time allowed to complete a degree if satisfactory progress has been demonstrated on the part of the student requesting an extension. For extensions, write to the director of graduate programs in business.
5. Students are not permitted to take undergraduate courses equivalent to foundation courses once they are admitted to the graduate program without the written permission of the director of graduate programs in business.
6. Grades received for undergraduate courses are not included in the calculation of the cumulative graduate GPA.
7. All students admitted into a program must have earned a bachelor's degree or its equivalent. To be accepted in the graduate program, in addition to other requirements, applicants must be in good standing at the college or university they previously attended.

## Master of Accountancy Program

The integrated 150-hour Professional Program gives students the opportunity to earn both a bachelor of science and master of accountancy degrees upon completion of the required 150 credit hours of study. It is an integrated program consisting of 120 hours of undergraduate credits and 30 hours of graduate credits. A student declares his/her major in accounting at the end of the sophomore year. He/she enters the 150-hour program at the beginning of the junior year and earns both degrees with a major in accounting and a concentration in information systems, finance and auditing, or another area of business. The 30 graduate credits consist of 10 courses, at least five of which the student may select from an area outside of accounting. The flexibility of electives gives students the ability to design a broad program, which supports and enhances career objectives.

A student can be guaranteed admission to the program in one of two ways:

1. Students who are participants in the University Honors Program and maintain the required scholastic standards throughout the freshman and sophomore years are guaranteed admission into the 150-hour program at the end of the sophomore year.
2. Students who rank in the top 15 percent of their high school class or who have a minimum unweighted 3.0 GPA, have a minimum combined SAT score of 1260 obtained in a single setting, and have a VCU undergraduate cumulative GPA of at least 3.5 at the end of their sophomore year are guaranteed admission.

Students who do not meet the criteria for guaranteed admission may seek admission to the program by submitting a complete application form for graduate study, including GMAT test score. Students who apply in this manner may be admitted, depending upon the cumulative GPA at the completion of the university general education requirements and the business foundation requirements along with satisfactory performance on the GMAT.

## Program requirements – 150-hour professional program

### Information systems track

Recommended course sequence for the 150-hour program with an information systems track:

First year	fall	spring
ENGL 101 and 200 Writing and Rhetoric Workshop I and II	3	3
MGMT 171 and 212 Applications and Calculus	3	3
Human behavior elective	3	-
Choose from anthropology, psychology or sociology		
Institutional studies elective	3	-
POLI 103 Introduction to Political Science		
Natural science elective	4	-
Choose from biology and laboratory, chemistry and laboratory, or physics and laboratory		
Restricted elective	-	3
Non-business elective	-	6
Total	16	15

Second year	fall	spring
Literature and language	3	-
ENGL 201 or foreign language or philosophy elective		
ACCT 203 and 204 Introduction to Accounting I and II	3	3
ECON 210 and 211 Principles of Economics I and II	3	3
INFO 360 Business Information Systems	3	-
MGMT 301 Business Statistics	3	-
SPCH 121 or 321 Effective Speech or Speech for Business and Professions	-	3
ENGL 304 Advanced Composition	-	3
Visual and performing arts elective	-	2
Total	15	14

Note: Upon completion of the foundation program, students are expected to have competency in computer based word processing and spreadsheet skills. Students without this competency must complete INFO 160, 161 or 162, or equivalent.

Third year	fall	spring
ACCT 303 and 304 Intermediate Accounting	3	3
ACCT 307 Accounting Systems	-	3
MGMT 319 Organization and Management	3	-
MGMT 320 Production Operations	-	3
MRBL 308 Introduction to Marketing	3	-
CMSC 255 Structured Programming	3	-
ECON 303 Managerial Economics	-	3
INFO 361 Systems Analysis and Design	-	3
MGMT 325 Organizational Communication	3	-
Total	15	15

Note: If INFO 161 and 162 are taken during the sophomore year instead of a non-business elective, then a non-business elective should be substituted for a business elective during the junior year.

Fourth year	fall	spring
INFO 362 Computer Hardware and Software	3	-
ACCT 306 Cost Accounting	3	-
MRBL 481 Business Law for Accountants I	-	3
ACCT 513 Financial Reporting	3	-
ACCT 405 Tax Accounting	-	3
FIRE 311 Financial Management	3	-
ACCT 401 Government and Not-for-profit Accounting	-	3
MGMT 434 Strategic Management	3	-
INFO 464 Database Systems	3	-
INFO 470 Local Area Networks	-	3
MGMT 524 Quantitative Management	-	3
Total	15	18

Fifth year	fall	spring
ACCT 506 Auditing	3	-
INFO 610 Analysis and Design of Database Systems	3	-
INFO 620 Data Communication	3	-
INFO 630 Information Engineering	-	3
INFO 640 Information Systems and Knowledge Management	3	-
ACCT 682 Corporate Taxation	-	3
ACCT 601 Accounting Theory	-	3
Undergraduate non-business elective	-	3
Graduate accounting elective	-	3
Graduate elective (accounting or information systems)	3	-
Total	15	15

## Finance and auditing track

Recommended course sequence for the 150-hour program with a finance and auditing track:

First year	fall	spring
ENGL 101 and 200 Writing and Rhetoric Workshop I and II	3	3
MGMT 171 and 212 Applications and Calculus	3	3
Human behavior elective	3	-
Choose from anthropology, psychology or sociology		
Institutional studies elective	3	-
POLI 103 Introduction to Political Science		
Natural science elective	4	-
Choose from biology and laboratory, chemistry and laboratory, or physics and laboratory		
Restricted elective	-	3
Non-business elective	-	6
Total	16	15

Second year	fall	spring
Literature and language	3	-
ENGL 201 or foreign language or philosophy elective		

ACCT 203 and 204 Introduction to Accounting I and II	3	3
ECON 210 and 211 Principles of Economics I and II	3	3
INFO 360 Business Information Systems 3	-	-
MGMT 301 Business Statistics	3	-
SPCH 121 or 321 Effective Speech or Speech for Business and Professions	-	3
ENGL 304 Advanced Composition	-	3
Visual and performing arts elective	-	2
Total	15	14

Note: Upon completion of the foundation program, students are expected to have competency in computer based word processing and spreadsheet skills. Students without this competency must complete INFO 160, 161 or 162, or equivalent.

Third year	fall	spring
ACCT 303 and 304 Intermediate Accounting	3	3
ACCT 307 Accounting Systems	-	3
MGMT 319 Organization and Management	3	-
MGMT 320 Production Operations	-	3
MRBL 308 Introduction to Marketing	3	-
FIRE 311 Financial Management	3	-
ECON 303 Managerial Economics	-	3
FIRE 312 Intermediate Financial Management	-	3
MGMT 325 Organizational Communication	3	-
Total	15	15

Note: If INFO 161 and 162 are taken during the sophomore year instead of a non-business elective, then a non-business elective should be substituted for a business elective during the junior year.

Fourth year	fall	spring
ACCT 306 Cost Accounting	3	-
MRBL 481 Business Law for Accountants I	-	3
ACCT 405 Tax Accounting	-	3
ACCT 506 Auditing	3	-
MGMT 434 Strategic Management	3	-
FIRE 314 Investments		
ACCT 401 Government and Not-for-profit Accounting	-	3
MGMT 524 Quantitative Management	-	3
ACCT 513 Financial Reporting	3	-
Non-business elective	3	-
Total	15	15

Fifth year	fall	spring
ACCT 604 Auditing	3	-
FIRE 621 Cases in Financial Management	3	-
FIRE 635 Investments and Security Analysis 3	-	-
FIRE 650 Derivatives*	3	-

FIRE 623 Corporate Finance*	-	3
ACCT 682 Corporate Taxation	-	3
ACCT 601 Accounting Theory	3	-
Undergraduate non-business elective	3	-
Graduate accounting elective	-	3
Graduate elective (accounting or finance)	3	-
<b>Total</b>	<b>15</b>	<b>15</b>

## General business track

Recommended course sequence for the 150-hour program with other business track:

<b>First year</b>	fall	spring
ENGL 101 and 200 Writing and Rhetoric Workshop I and II	3	3
MGMT 171 and 212 Applications and Calculus	3	3
Human behavior elective Choose from anthropology, psychology or sociology	3	-
Institutional studies elective POLI 103 Introduction to Political Science	3	-
Natural science elective Choose from biology and laboratory, chemistry and laboratory, or physics and laboratory	4	-
Restricted elective	-	3
Non-business elective	-	6
<b>Total</b>	<b>16</b>	<b>15</b>

<b>Second year</b>	fall	spring
Literature and language ENGL 201 or foreign language or philosophy elective	3	-
ACCT 203 and 204 Introduction to Accounting I and II	3	3
ECON 210 and 211 Principles of Economics I and II	3	3
INFO 360 Business Information Systems 3	-	-
MGMT 301 Business Statistics	3	-
SPCH 121 or 321 Effective Speech or Speech for Business and Professions	-	3
ENGL 304 Advanced Composition	-	3
Visual and performing arts elective	-	2
<b>Total</b>	<b>15</b>	<b>14</b>

Note: Upon completion of the foundation program, students are expected to have competency in computer based word processing and spreadsheet skills. Students without this competency must complete INFO 160, 161 or 162, or equivalent.

<b>Third year</b>	fall	spring
ACCT 303 and 304 Intermediate Accounting	3	3
ACCT 307 Accounting Systems	-	3

MGMT 319 Organization and Management	3	-
MGMT 320 Production Operations	-	3
MRBL 308 Introduction to Marketing	3	-
FIRE 311 Financial Management	-	3
ECON 303 Managerial Economics	-	3
Undergraduate track (300 level)	3	-
MGMT 325 Organizational Communication	3	-
<b>Total</b>	<b>15</b>	<b>15</b>

Note: If INFO 161 and 162 are taken during the sophomore year instead of a non-business elective, then a non-business elective should be substituted for a business elective during the junior year.

<b>Fourth year</b>	fall	spring
ACCT 306 Cost Accounting	3	-
MRBL 481 Business Law for Accountants I	-	3
ACCT 405 Tax Accounting	-	3
ACCT 506 Auditing	3	-
MGMT 434 Strategic Management	3	-
Undergraduate track (400 level)	3	-
ACCT 401 Government and Not-for-profit Accounting	-	3
MGMT 524 Quantitative Management	-	3
ACCT 513 Financial Reporting	3	-
Non-business elective	3	-
<b>Total</b>	<b>15</b>	<b>15</b>

<b>Fifth year</b>	fall	spring
ACCT 604 Auditing	3	-
Graduate track (600 level)	6	6
ACCT 682 Corporate Taxation	-	3
ACCT 601 Accounting Theory	3	-
Undergraduate non-business elective	3	-
Graduate accounting elective	-	3
Graduate elective (accounting or track)		3
<b>Total</b>	<b>15</b>	<b>15</b>

## Master of Accountancy Program/ students with a bachelor's degree in accounting

Students who have already completed a bachelor's degree in the field of accounting from an accredited institution may be admitted directly to the master of accountancy program. The graduate degree requires completion of 10 graduate courses. There are four 600-level required accounting courses and six 600-level courses selected from the three tracks of interest. Students applying directly to the master of accountancy program may be admitted depending upon the cumulative grade-point average obtained in the last 60 credits of course work, plus satisfactory performance on the GMAT.

## Requirements of the Master of Accountancy Program/students with a bachelor's degree in accounting

### Department of Accounting prerequisites:

ACCT 401 Governmental and Not-for-profit Accounting (if not previously taken)  
ACCT 506 Auditing  
ACCT 513 Financial Reporting

### Graduate accounting required core courses:

ACCT 601 Financial Accounting Theory  
ACCT 604 Auditing  
ACCT 606 International Accounting  
ACCT 682 Financial Reporting

### Graduate elective courses:

Students are permitted to select six 600-level courses from the three tracks of interest (information systems, finance and auditing, or general business). Students are encouraged to take the following elective courses for specialty training in the following three tracks. The final selection of elective courses that will be taken for graduation can be negotiated with the student's graduate academic adviser.

**Information systems** – students selecting this track may be required to complete additional undergraduate prerequisite courses before taking the graduate information systems electives.

INFO 610 Analysis and Design of Database Systems  
INFO 620 Data Communication  
INFO 630 Information Engineering  
INFO 640 Information Systems and Knowledge Management

One graduate elective in accounting

One graduate elective in either accounting or information systems

### Finance and auditing

FIRE 621 Cases in Financial Management  
FIRE 635 Investments and Security Analysis  
Two graduate electives in finance

One graduate elective in accounting

One graduate elective in accounting or finance

**Other approved business** – students will work with their advisers to identify a separate track of study in one of the following approved areas: economics, international business, management, marketing or another area negotiated with the faculty adviser. Depending upon the track of study selected, students may have to complete additional undergraduate prerequisites. The number of graduate electives that must be taken is the same, regardless of the area of study.

Four graduate electives in selected track

One graduate elective in accounting

One graduate elective in accounting or selected track

## Master of Accountancy Program/ students with a bachelor's degree in fields other than accounting

Students who have already completed a bachelor's degree in a field of study other

than accounting from an accredited institution may be admitted directly to the Master of Accountancy Program. The graduate degree requires completion of 10 graduate courses. There are four 600-level required accounting courses and six 600-level courses selected from the three tracks of interest. Students applying directly to the master of accountancy program may be admitted depending upon the cumulative grade-point average obtained in the last 60 credits of course work, plus satisfactory performance on the GMAT.

## Requirements for the Master of Accountancy Program with a bachelor's degree in another field of study

### School of Business foundation requirements (up to 12 semester credits)

ACCT 507 Fundamentals of Accounting  
And three of the following courses, depending upon track of interest  
ECON 500 Concepts in Economics  
FIRE 520 Financial Concepts of Management  
MGMT 500 Quantitative Foundation for Decision Making  
MGMT 524 Statistical Elements of Quantitative Management  
MGMT 540 Management Theory and Practice  
MRBL 530 Fundamentals of the Legal Environment of Business  
MRBL 570 Concepts and Issues in Marketing

### Department of Accounting prerequisites (up to 21 semester credits)

ACCT 303 Financial Accounting I  
ACCT 304 Financial Accounting II  
ACCT 306 Cost Accounting  
ACCT 401 Governmental and Not-for-profit Accounting  
ACCT 405 Tax Accounting  
ACCT 506 Auditing  
ACCT 513 Financial Reporting

### Graduate accounting required core courses

All master's students must complete the following four graduate courses:  
ACCT 601 Financial Accounting Theory  
ACCT 604 Auditing  
ACCT 606 International Accounting  
ACCT 682 Corporate Taxation

### Graduate elective courses

Students permitted to select six 600-level courses from the three tracks of interest (information systems, finance and auditing, or general business). Students are encouraged to take the following electives for specialty training in the tracks. The final selection of elective courses that will be taken for graduation can be negotiated with the student's graduate academic adviser.

**Information systems** – students selecting this track may be required to complete additional undergraduate prerequisite courses before taking the graduate INFO electives:

INFO 610 Analysis and Design of Database Systems  
INFO 620 Data Communication  
INFO 630 Information Engineering  
INFO 640 Information Systems and Knowledge Management  
One graduate elective in accounting  
One graduate elective in either accounting or information systems

### Finance and auditing

FIRE 621 Cases in Financial Management  
FIRE 635 Investments and Security Analysis  
Two graduate electives in finance  
One graduate elective in accounting  
One graduate elective in accounting or finance

**Other approved business** – students will work with their advisers to identify a separate track of study in one of the following approved areas: economics, international business, management, marketing or another area negotiated with the faculty adviser. Depending upon the track of study selected, students may have to complete additional undergraduate prerequisites. The number of graduate electives that must be taken is the same, regardless of the area of study:  
Four graduate electives in selected track  
One graduate elective in accounting  
One graduate elective in accounting or selected track

## Master of Arts in Economics Program

The master of arts in economics is designed to enhance the students' abilities to use economic modeling to conduct applied analytical and econometric research. Master of arts students are expected to demonstrate competence over a rigorous and current core curriculum in microeconomic and macroeconomic theory and in econometrics.

Graduates of the program should be well qualified to conduct applied economic analysis in either a government or corporate research setting. The program also is an excellent preparation for entry into a doctoral program in economics or finance.

Students may elect a master of arts in economics without specialization or may specialize in financial economics. The specialization in financial economics combines the theoretical and econometric foundation obtained in the core courses of the concentration in quantitative economics with an in-depth study of their application to financial markets.

The master of arts without specialization requires 30 semester hours of work, while the master of arts with specialization in financial economics requires 33 semester

hours. Both a thesis and a nonthesis option are available.

## Admission criteria

Admission criteria include undergraduate performance, the Graduate Record Examination (GRE), intellectual capacity, experience and other indicators of the ability to pursue graduate study profitably. The GRE subject test in economics is not required. Applicants to the financial economics track may substitute the GMAT for the GRE. Applications should be completed at least eight weeks prior to the beginning of the semester or summer session desired.

## Requirements for the master of arts in economics without specialization

One course in each of the following subject areas is a prerequisite for the master of arts in economics: intermediate macroeconomic theory, intermediate microeconomic theory, introductory econometrics and calculus. The student's adviser will review the student's economics and mathematical background to determine the extent to which the student has satisfied the prerequisites. Required prerequisites may be taken after admission.

The degree requires 30 semester hours of 600-level credit. Under the thesis option, the 30 hours must include eight core courses and one economics elective, and one business or economics elective. Under the non-thesis option, the 30 hours must include six core courses, two economics electives, and two business or economics electives.

### Degree requirements with thesis

Core area	credits
ECON 604 Advanced Microeconomic Theory	3
ECON 607 Advanced Macroeconomic Theory	3
ECON 612 Econometrics	3
ECON 614 Mathematical Economics	3
ECON 641 Econometric Time Series Analysis	3
ECON 642 Panel and Nonlinear Methods in Econometrics	3
ECON 798-799 Thesis in Economics	6
	24
Approved economics elective	3
Approved elective in economics, business or other field	3
	30

### Degree requirements without thesis

Core area	credits
ECON 604 Advanced Microeconomic Theory	3
ECON 607 Advanced Macroeconomic Theory	3
ECON 612 Econometrics	3
ECON 614 Mathematical Economics	3

ECON 641 Econometric Time Series Analysis	3
ECON 642 Panel and Nonlinear Methods in Econometrics	3
	18
Approved economics electives	6
Approved electives in economics, business or other field	6
	30

## Requirements for master of arts in economics with a specialization in financial economics

One course in each of the following subject areas is a prerequisite for the specialization in financial economics: intermediate macroeconomic theory, intermediate microeconomic theory, introductory econometrics, calculus and finance. The student's adviser will review the student's economics and mathematical background to determine the extent to which the student has satisfied the prerequisites. Required prerequisites may be taken after admission.

The specialization in financial economics requires 33 semester hours of 600-level courses. Under the thesis option, the 33 hours must include nine core courses and two restricted electives. Under the non-thesis option, the 33 hours must include seven core courses, three restricted electives and one general elective in economics, finance or other approved field.

### Degree requirements with thesis

Core area	credits
ECON 604 Advanced Microeconomic Theory	3
ECON 607 Advanced Macroeconomic Theory	3
ECON 612 Econometrics	3
ECON 614 Mathematical Economics	3
ECON 641 Econometric Time Series Analysis	3
ECON 642 Panel and Nonlinear Methods in Econometrics	3
ECON 798-799	6
	27

### Restricted electives

Two of the following three courses	6
ECON 623 Anomalies in Financial Economics	
FIRE 635 Investments and Security Analysis	
FIRE 650 Derivatives	
	33

### Degree requirements without thesis

Core area	credits
ECON 604 Advanced Microeconomic Theory	3
ECON 607 Advanced Macroeconomic Theory	3

ECON 612 Econometrics	3
ECON 614 Mathematical Economics	3
ECON 617 Financial Markets	3
ECON 641 Econometric Time Series Analysis	3
ECON 642 Panel and Nonlinear Methods in Econometrics	3
	21

### Restricted electives

Three of the following four courses	9
ECON 623 Anomalies in Financial Economics	
FIRE 623 Financial Management	
FIRE 635 Investments and Security Analysis	
FIRE 650 Derivatives	
	30

Approved elective in economics, finance or other field	3
	33

Note: Electives are approved in consultation with the graduate adviser for the master of arts in economics.

## Master of Business Administration programs

The purpose of the Master of Business Administration programs at VCU is to prepare individuals for the responsibilities of management. As students at VCU, individuals will learn the functions and techniques of effective management. The student also will come to understand the environmental and economic factors that affect decision making in organizations. In short, the student will know what to do as future events unfold that affect his/her firm or organization.

An M.B.A. from VCU benefits students at various points in their career. Individuals who have recently received their baccalaureate may choose to refine their business skills while their undergraduate training is fresh. Individuals with work experience often find that an M.B.A. is the key to rapid promotion or a career change. Finally, an M.B.A. from VCU meets the needs of students who recognize that the best preparation for an uncertain future is continuous learning.

School of Business students have diverse interests, backgrounds, and levels of business experience. Therefore, the school provides a choice of programs by which the students may obtain an M.B.A. The technology-focused M.B.A. is designed for students who wish to attend school in the evening on either a full- or part-time basis. The dual M.B.A./M.S. Information Systems degree program allows students to pursue

both degrees simultaneously. The Fast Track Executive M.B.A. Program is designed for applicants with at least six years of business experience who are interested in attending class on the weekends.

## The M.B.A. Program

The curriculum for the technology-focused M.B.A. Program is flexible and is designed for students with diverse undergraduate backgrounds. The technology-focused M.B.A. student may elect an M.B.A. without a concentration or may prefer an M.B.A. with a concentration or an M.B.A. with a double concentration. Concentrations are available in nine areas: accounting, decision sciences, economics, finance, human resource management and industrial relations, information systems, marketing, real estate and urban land development, or risk management and insurance.

Most classes are held in the evening to accommodate working students' schedules. Classes typically meet one evening a week from 7 to 9:40 p.m. A limited number of classes meet twice a week, either in the morning from 7 to 8:15 a.m., or in the early evening from 5:30 to 6:45 p.m. Technology-focused M.B.A. courses are also offered at Innsbrook, an office park and residential area in the suburban west end of Richmond.

Students may choose to include international study or an exchange program in their course of study. In recent years, credit has been earned for programs in Italy, China, France, Germany, Hong Kong, Indonesia and Mexico.

## Admission criteria

Admission criteria include undergraduate performance, Graduate Management Admissions Test (GMAT) scores, intellectual capacity, experience and other indicators of the ability to pursue graduate study profitably.

Spring	Nov 1
Summer	Mar 1
Fall	Apr 1/early decision
	Jun 1/final deadline

## Requirements for the M.B.A.

- A course in calculus is a prerequisite for the M.B.A. This prerequisite may be waived for students who present satisfactory, equivalent preparation. Applicants who have not met this prerequisite may take the course after admission.



- Students are expected to enter the program with basic computing proficiency. Specific expectations will be provided by the Graduate Studies in Business Office. Specific means of evaluating and correcting any deficiency also will be identified.
- The program includes seven foundation courses, which may be waived for students who have taken the equivalent material at the undergraduate level. These courses must be taken at the graduate level after the student has been admitted.

Foundation courses	credits
ACCT 507 Fundamentals of Accounting	3
FIRE 520 Financial Concepts of Management	3
MGMT 524 Statistical Elements of Quantitative Management	3
MRBL 530 Fundamentals of the Legal Environment of Business	3
MGMT 540 Management Theory and Practice	3
MRBL 570 Concepts and Issues in Marketing	3
ECON 500 Concepts in Economics	3
	21

#### Advanced courses

Each student must begin the advanced portion of the program with the courses below in each of the first two semesters. Full-time students will take additional courses from the remainder of the Advanced Program.

Semester one	credits
INFO 661 Information Systems for Managers	3
MGMT 641 Organizational Leadership and Project Team Management	3
Semester two	
INFO 664 Emerging Information Technologies	3
MGMT 675 Operations Management and Decision Technology	3

#### Remainder of the Advanced Program

ACCT 608 Managerial Accounting Concepts	3
ECON 610 Managerial Economics	3
FIRE 621 Cases in Financial Management	3
MGMT 642 Business Policy	3
MRBL 671 Marketing Management	3
Electives*	9

**Total credits in Advanced Program** **36**

\* Electives must be 600-level courses. A student's choice of electives must include one or more courses that are designated to have substantial global, entrepreneurial and/or experiential components. Students can establish a concentration by taking all electives in a single area. The Graduate Studies in Business Office maintains current lists of approved electives for each concentration and for the general program.

### Fast Track Executive Master of Business Administration Program

The Fast Track Executive Master of Business Administration Program provides an opportunity for rising executives and professionals with six or more years of management-level work experience to obtain a master's degree in business administration. Participants gain a wide range of new skills and knowledge by combining course work with day-to-day business activities.

The program is targeted to rising business executives, entrepreneurs, nonprofit managers and service professionals. The program differs from other master of business programs at VCU as a result of its unique modular curriculum which integrates components of communication, technology, service/quality, globalism and strategy. The modules include 1) organizational culture, 2) analysis and decisions, 3) team building and leadership, 4) global challenges, 5) productivity and innovation, and 6) strategic management.

The Fast Track Executive M.B.A. Program is a lockstep program that meets alternating weekends, Fridays 1 to 5 p.m. and Saturdays 8 a.m. to 5 p.m. The program can be completed in approximately 18 months. For more information, contact the Fast Track Executive M.B.A. Office at (804) 828-3939 or fax (804) 828-6717.

### Requirements for the Fast Track Executive M.B.A. Program

The program is designed for students with familiarity with calculus, statistics, economics, finance and accounting. The student's adviser will review the student's educational and professional background to determine the extent to which the student has satisfied the prerequisites. Students with outstanding prerequisites will be required to attend one or more training sessions to remove any deficiencies.

The program consists of 13 courses which are divided into six integrated modules.

Degree requirements	credits
FMBA 601 Organizational Culture and Foundations (course 1)	3
FMBA 602 Organizational Culture and Foundations (course 2)	3
FMBA 603 Analysis and Decisions (course 1)	3
FMBA 604 Analysis and Decisions (course 2)	3
FMBA 605 Analysis and Decisions (course 3)	3
FMBA 606 Teambuilding and Leadership (course 1)	3
FMBA 607 Teambuilding and Leadership (course 2)	3
FMBA 608 Global Challenges (course 1)	3
FMBA 609 Productivity and Innovation (course 1)	3
FMBA 610 Productivity and Innovation (course 2)	3
FMBA 611 Strategic Management (course 1)	3

FMBA 612 Strategic Management (course 2)	3
FMBA 613 Strategic Management (course 3)	3
	39

### Pharm.D./M.B.A.

The Pharm.D./M.B.A. Program seeks to prepare pharmacists for careers that encompass pharmacy and business theories and principles. The program is designed to take advantage of efficiencies in both the Pharm.D. and M.B.A. programs, where students in the combined program can complete the program requirements of both degree programs in as much as one year or less than by enrolling in the two programs separately. Both degrees are awarded at the same graduation ceremony.

Students may be admitted in the program during their first year of enrollment in the Pharm.D. Program. Applicants must be an enrolled student in the Pharm.D. program, have demonstrated a good academic record and have successfully completed the Graduate Management Admission Test (GMAT).

To get both degrees, students will take all pharmacy courses unless waived, the seven business foundation courses, the nine M.B.A. core courses and three elective courses. The elective M.B.A. courses may be taken from pharmacy administration courses at the 600 level, and a combination of a business seminar course and an elective advanced pharmacy practice experience in pharmacy management. The business foundation courses can be taken during the first two years in the pharmacy program with summer session(s). The M.B.A. core courses can be taken during the third and fourth years in the pharmacy program. The business electives can be taken during the fourth and fifth years in the combined program.

### M.B.A./M.S. Information Systems

Students can earn both M.B.A. and M.S. in Information Systems Degrees by having 12 credits counted toward both degrees, thus requiring only 54 credits total of advanced course work (not counting foundation courses), rather than the 36 and 30 credits normally required for the two degrees. Students in the combined degree program will follow the same schedule as regular M.B.A. students, including the two lockstep semesters. To get both degrees, students will take all foundation courses required for the M.B.A., unless waived, all nine core courses required for the M.B.A., and nine additional courses in the M.S. in Information Systems program, including INFO 610, INFO 620 and INFO 630.

Students whose undergraduate degree is not in Information Systems may also be required to take additional undergraduate prerequisite courses before taking the graduate Information Systems courses, as determined by the program advisor. The INFO 661 course taken for the M.B.A. will substitute for INFO 640, normally required for the M.S. in Information Systems degree, and three of the additional Information Systems courses will also count toward the normally required three elective courses in the M.B.A. program.

One of the Information Systems courses must have substantial global, entrepreneurial and/or experiential components. The six Information Systems courses to be taken in addition to INFO 661, INFO 664, INFO 610, INFO 620 and INFO 630 must be approved by the program advisor, and would normally be selected to satisfy one of the M.S. in Information Systems tracks.

## Master of Science in Business Program

The master of science program provides in-depth knowledge of one business discipline and allows students to develop and build technical skills in their specific area of interest. It is frequently recommended for students with an undergraduate business degree. Concentrations are available in six functional areas:

- Decision Sciences
- Finance
- Global Marketing Management
- Human Resource Management and Industrial Relations
- Real Estate Valuation

## Requirements for the Master of Science in Business Program

A course in college algebra is a prerequisite for some concentrations; a course in calculus is required for others. Some concentrations (e.g., information systems and real estate valuation) have additional undergraduate prerequisites as well. Some or all of these prerequisite courses may be waived for students who present satisfactory, equivalent preparation or may be taken after admission.

Each student in the program must complete a minimum of four 500-level foundation courses (12 credit hours) required for the M.B.A. degree. Foundation courses may be waived for students who present satisfactory, equivalent preparation at either the undergraduate or graduate level. Students who are required to take foundation courses

may do so at the graduate level after admission. The foundation courses required will vary depending upon the student's background, career interests, and the chosen area of specialization. Applicants should consult with the area coordinators or department chairs or the director of graduate programs in business to determine the foundation courses required for a particular area.

Each student in the program also must complete a minimum of 10 600-level advanced courses (30 credit hours), although up to two additional courses (six credit hours) may be required for some concentrations. A student, in consultation with a faculty adviser, selects a set of advanced courses to create a tailored and focused program of study. Applicants should consult with the area coordinators, department chairs, or the director of graduate programs in business to determine the departmental guidelines controlling the required courses and electives for a particular concentration.

For additional information, refer to the Web: <http://www.vcu.edu/busweb/gisib>.

## Admission criteria for master of science

Admission criteria include undergraduate performance, GMAT scores, intellectual capacity, experience, and other indicators of the ability to pursue graduate study profitably.

Spring	Nov 1
Summer	Mar 1
Fall	Apr 1/early decision Jun 1/final deadline

## Decision Sciences

This concentration provides students with both a conceptual understanding of quantitative methods used successfully in many business environments and also skills in applying them. In addition to statistics, operations research, and production/operations management courses, a restricted number of approved quantitative courses can be selected from the departments of Economics, Biostatistics or Mathematical Sciences.

**Foundation courses** (0 to 15 credit hours)  
MGMT 524 Statistical Elements of Quantitative Management

And at least four of the courses listed below or provide proof of satisfactory equivalent preparation:

ACCT 507 Fundamentals of Accounting  
FIRE 520 Financial Concepts of Management  
MGMT 540 Management Theory and Practice  
MRBL 570 Concepts and Issues in Marketing  
ECON 500 Concepts in Economics

**Core courses** (30 credit hours)

MGMT 645 Operations Research

MGMT 632 Statistical Analysis

And any three of the four courses below:

MGMT 648 Managerial Decision Making

MGMT 669 Forecasting Methods

MGMT 675 Operations Management

MGMT 677 Quality

And any five courses selected from below that meet the approval of the faculty adviser:

A fourth course from the above list (MGMT 648, MGMT 669, MGMT 675 or MGMT 677)

From the School of Business (other business courses may be selected that would fit with the student's interests and career objectives):

ACCT 608 Managerial Accounting

ECON 610 Managerial Economics

ECON 612 Econometrics

ECON 614 Mathematical Economics

INFO 619 Computer Assisted Simulation

MGMT 642 Business Policy

MGMT 643 Applied Multivariate Methods

MGMT 697 Guided Study

MRBL 673 Marketing Research

From outside the School of Business:

BIOS 647 Survival Analysis

MATH 520 Game Theory and Linear Programming

MATH 523 Discrete Event Simulation

MATH 527-528 Mathematical Foundations of

Operations Research

STAT 503 Introductions to Stochastic Processes

STAT 513-514 Mathematical Statistics

STAT 523 Nonparametric Statistical Methods

STAT 549 Statistical Quality Control

STAT 623 Discrete Multivariate Analysis

Note: Most of the courses above have prerequisites. It is always wise to check with the instructor before registering to make sure that the student's preparation is sufficient for taking the course.

## Finance

The finance concentration is designed to prepare students for financial decision-making positions in corporate, investment, financial and governmental institutions. Courses offered in finance include advanced financial management, investments and security analysis, funds management in financial institutions, international finance and derivatives.

### Prerequisite

Calculus (MGMT 212 or 500)

**Foundation courses** (0 to 12 credit hours, dependent on the number of courses waived or included as free electives.)

ACCT 507 Fundamentals of Accounting

ECON 500 Concepts in Economics

FIRE 520 Financial Concepts of Management

MGMT 524 Statistical Elements of Quantitative Management

**Core area** (15 credit hours)

FIRE 622 Financial Management of Financial Institutions

FIRE 623 Financial Management

FIRE 635 Investments and Security Analysis  
FIRE 639 International Finance  
FIRE 650 Derivatives

### Finance, Insurance and Real Estate electives

(12 credit hours) Students select four of the following courses:

FIRE 621 Cases in Financial Management  
FIRE 625 Group Insurance and Pension Planning  
FIRE 626 Risk Management  
FIRE 628 Cases in Real Estate Valuation  
FIRE 629 Real Estate Investment Analysis  
FIRE 654 Short-term Financial Management  
FIRE 657 Current Issues in Investments and Markets  
FIRE 658 Real Estate Finance and Investments  
FIRE 664 Current Issues in Corporate Finance  
FIRE 691 Topics in Finance, Insurance and Real Estate  
FIRE 693 Field Project in Finance, Insurance and Real Estate\*  
FIRE 697 Guided Study in Finance, Insurance and Real Estate

\* FIRE 693 Field Project in Finance, Insurance and Real Estate is recommended for full-time students. The department will work closely with full-time students and prospective employers in order to achieve this goal. A student may substitute a free elective for one of the FIRE electives with the approval of the director of the M.S. program in finance.

### Free electives (9 credit hours)

Students may choose any three free electives approved by the director of the M.S. program in finance. Students are encouraged to select accounting, economics, math or statistics courses. Up to two foundation courses may be included as free electives, if they were not waived, as may additional courses included in the list of Finance, Insurance and Real Estate electives.

## Global Marketing Management

The Master of Science in Business with Global Marketing Management concentration offers students the opportunity to concentrate their studies in international marketing and contemporary issues in marketing management while taking courses in other business disciplines that support the program's focus on global business management. Students select foundation, core and/or elective courses in accounting, economics, finance, information systems or management to complement marketing courses in the program. Students interested in preparing for the increasingly global nature of business will be well suited for this unique master of science degree program. All degree candidates are strongly encouraged to participate in an intensive study program in a foreign language and/or a foreign study program.

**Foundation courses** (0 to 12 credit hours, depending upon how many courses are waived.)

MRBL 570 Concepts and Issues in Marketing  
And any three of the following:

ACCT 507 Fundamentals of Accounting  
ECON 500 Concepts in Economics  
FIRE 520 Financial Concepts of Management  
MGMT 524 Statistical Elements of Quantitative Management  
MRBL 530 Fundamentals of the Legal Environment of Business

### Core area (18 credit hours)

MRBL 671 Marketing Management

And any five of the following:

ACCT 606 International Accounting (prerequisite ACCT 507)  
ECON 609 Advanced International Economics (prerequisite ECON 500)  
FIRE 639 International Finance (prerequisite FIRE 520)  
MGMT 644 International Business Management  
MRBL 656 International Marketing (prerequisite MRBL 570)  
MRBL 657 International Marketing Planning Project (prerequisite MRBL 570 and 673)  
MRBL 673 Marketing Research (prerequisite MRBL 570 and MGMT 524)

### Marketing electives (6 credit hours)

Any two of the following courses, all of which require MRBL 570 as prerequisite:

MRBL 651 Direct Marketing Theory and Research  
MRBL 652 Database and Direct Marketing Strategy  
MRBL 653 Concepts and Issues in Direct Marketing Management  
MRBL 657 IMP Project (if not used in core)  
MRBL 659 Database Marketing  
MRBL 672 Concepts in Consumer Behavior  
MRBL 674 Service Quality Management

### Restricted electives (6 credit hours)

Any two of the following courses:

ACCT 606 International Accounting  
ECON 609 Advanced International Economics (if not used in the core)  
FIRE 639 International Finance (if not used in the core)  
INFO 661 Management Information Systems  
MRBL 697 Guided Study in Business

## Human Resource Management and Industrial Relations

The master of science with a human resource management and industrial relations concentration is designed to provide students with an in-depth understanding of the field and its problems and opportunities. The curriculum focuses on the dynamics of an ever-changing field from both a local, national and international perspective. The ultimate objective of the program is to prepare students for a career in human resource management and industrial relations.

**Foundation courses** (0 to 12 credit hours, depending upon how many courses are waived)

ECON 500 Concepts in Economics  
MGMT 524 Statistical Elements of Quantitative Management

MGMT 540 Management Theory and Practice  
MRBL 530 Fundamentals of the Legal Environment of Business

### Core area (30 credit hours)

FIRE 625 Group Insurance and Pension Planning  
ECON 631 Labor Market Theory and Analysis  
MGMT 633 Issues in Labor Relations  
MGMT 637 Seminar in Human Resource Management  
MGMT 649 Compensations Policy and Administration  
MGMT 680 Health, Safety and Security Administration  
MGMT 682 Human Resource Staffing  
MGMT 684 Issues in International Human Resource Management  
MGMT 690 Business Research Seminar  
MRBL 646 Advance Labor and Employment Relations Law

## Real Estate Valuation

The real estate valuation concentration is one of only five programs in the nation that satisfies the rigorous educational requirements of the Appraisal Institute's MAI designation. Students can satisfy most of the Appraisal Institute's education requirements by completing the concentration. This concentration emphasizes real estate valuation while providing comprehensive education in related disciplines so that graduates' analytical skills and abilities to communicate with other professionals are greatly enhanced. Whenever possible, students will be placed in internships with MAIs.

### Prerequisite courses

FIRE 425 Real Estate Appraisal  
FIRE 431 Advanced Real Estate Appraisal  
A course in calculus (MGMT 212 or MGMT 500)

**Foundation courses** (0 to 18 hours, dependent on the number of courses waived)

ACCT 507 Fundamentals of Accounting  
ECON 500 Concepts in Economics  
FIRE 520 Financial Concepts of Management  
MGMT 524 Statistical Elements of Quantitative Management  
MRBL 530 Fundamentals of the Legal Environment of Business  
MRBL 570 Concepts and Issues in Marketing

### Required courses (30 credit hours)

ECON 617 Financial Markets  
FIRE 621 Cases in Financial Management  
FIRE 627 Real Estate Development  
FIRE 629 Real Estate Investment Analysis  
FIRE 638 Real Property Investment Law  
FIRE 658 Real Estate Finance and Investments  
FIRE 697 Guided Study – Real Estate  
FIRE 697 is a supervised research course that involves the preparation of a narrative income-property appraisal report  
MGMT 632 Statistical Analysis  
MRBL 673 Marketing Research  
URSP 621 Introduction to Geographic Information Systems

## Master of Science in Information Systems

The master of science program in information systems is designed to prepare students for specialized roles in information systems. The program is intended to provide a graduate level, technically-oriented curriculum that focuses on the design and development of information systems to solve real-world problems. The department's curriculum is focused on the rapidly emerging area known as Enterprise Information Systems. Graduates of the program are expected to be able to take significant roles in planning, organizing, managing, designing, configuring and implementing EIS systems using state-of-the-art technologies within organizations. Additionally, M.S. Information Systems students can apply to the M.B.A./M.S. Information Systems dual degree program.

Students applying to the master's program must show evidence of competence in selected prerequisite areas of information systems including: application programming, systems analysis and design, database, telecommunications and hardware/software. Evidence of this competence may include formal course work, comparable training within a work environment, or significant, relevant and recent work experience in the field. Students enrolled as majors in the program who do not have formal background or equivalent training must take the appropriate undergraduate courses to satisfy the prerequisites prior to taking master's program courses. The required undergraduate courses are: INFO 300, INFO 350, INFO 360, INFO 361, INFO 370, INFO 464 and a course in calculus.

Students who do not have a business degree must complete a minimum of four 500-level foundation courses (12 credit hours). Foundation courses may be waived for students who present satisfactory, equivalent preparation at either the undergraduate or graduate level. Students who are required to take foundation courses may do so after admission. The foundation courses required will vary depending upon the student's background, career interests and the chosen area of specialization. Students applying to the master of science program in information systems should consult with their adviser for the master's program to determine the foundation courses required for a particular area.

The program consists of 30 graduate credit hours including: four core courses (12 credit hours) and six track courses (18 credit hours). Core graduate course include:

INFO 610 Analysis and Design of Database Systems  
INFO 620 Data Communications  
INFO 630 Information Engineering  
INFO 640 Information Systems and Knowledge Management

In addition to the core courses, students must select an area of specialization. Three tracks are defined: Network/Infrastructure (N/I), E-business Systems Engineering (EBSE), and Information Engineering (IE). Each track consists of required courses and two electives, to be taken in consultation with the student's adviser and based upon the student's area of interest, career goals and existing departmental and university areas of expertise.

### Network/Infrastructure Track

The N/I Track prepares students for the technical aspects of network administration, systems administration and database administration.

INFO 622 Network Administration I  
INFO 624 Network Administration II  
INFO 626 Systems Performance  
INFO 628 Database and Systems Administration  
Two electives

### E-business Systems Engineering Track

The EBSE track prepares students to design and deploy e-business systems.

INFO 632 Business Process Engineering  
INFO 654 E-business Interface Design  
INFO 658 Electronic Commerce  
INFO 659 E-commerce Systems Architecture  
Development  
Two electives

### Information Engineering Track

The IE Track is intended to train specialists who can function effectively as business consultants, project leaders, business analysts and application developers. Students gain the ability to participate in planning, organizing and managing enterprise information systems projects as well as design, configuration and implementation of business applications.

INFO 611 Data Reengineering  
INFO 616 Data Warehousing  
INFO 632 Business Process Engineering  
INFO 634 Application Engineering  
Two electives

## Master of Taxation Program

The Master of Taxation Program is designed 1) to offer an opportunity for existing tax professionals to update and expand existing tax knowledge, and 2) to prepare students for entry level positions in the field of taxation. The program includes a comprehensive study of tax laws and regulations, administrative practice and procedure, and tax research fundamentals. It is designed to develop both technical knowledge and

conceptual understanding within the field of taxation. Ethical considerations are stressed within the framework of individual courses.

### Admission criteria

Applicants may be admitted under either a professional or an academic track. The professional track is designed for current tax professionals who desire to enhance existing skills. Admission under the professional track requires a minimum undergraduate GPA of 3.0 (on a 4.0 scale); C.P.A., C.M.A. or J.D. designation; a minimum of two years relevant work experience which should include independent tax research and supervisory experience; letters of recommendation; and a personal interview. The academic track is designed primarily for students seeking entry into the tax field. Admission under the academic track is based on traditional academic indicators designed to reflect an individual's ability to complete graduate study, and include the undergraduate record, GMAT score, letters of recommendation, and a personal interview (preferred). Once admitted to the program, all students must satisfy the same requirements for award of the master of taxation degree. Applications should be completed by:

Fall	Jul 15
Spring	Nov 15
Summer	Mar 15

### Requirements for the Master of Taxation Program

Three semester hours of tax accounting and a course in college algebra are prerequisites for the master of taxation. Prerequisites need not be completed prior to completing the application to the program.

The program consists of one prerequisite course, three foundation courses and 10 courses distributed over core courses, restricted electives and individual electives. The foundation courses may be waived for students who have taken the equivalent material at the undergraduate level or may be taken at the graduate level after the student has been admitted. A minimum of 30 hours of advanced graduate credit at the 600 level or higher will be required of all students.

### Degree requirements – Master of Taxation

<b>Prerequisite course</b>	credits
ACCT 405 Tax Accounting	3

### Foundation courses\*

ACCT 507 Fundamentals of Accounting	3
MRBL 530 Fundamentals of the Legal Environment of Business	3
One course from the following list:	3
ECON 500 Concepts in Economics	
FIRE 520 Concepts of Financial Management	
MGMT 540 Management Theory and Practice	

### Advanced courses

Core area	
ACCT 680 Tax Research	3
ACCT 681 Tax Administration	3
ACCT 682 Corporate Taxation	3
ACCT 685 Taxation of Property Transactions	3
ACCT 688 Estate and Gift Taxation	3
	15

### Taxation electives

Three courses selected from the following list:	9
ACCT 609 State and Local Taxation	
ACCT 679 International Taxation	
ACCT 683 Taxation of Reorganizations	
ACCT 684 Partnership Taxation	
ACCT 686 Taxation of Pension/Deferred Compensation	
ACCT 687 Fiduciary Income Taxation	
ACCT 689 Estate Planning	

### Approved electives

6  
30

\* These foundation courses may not be included in the 30 semester credits of advanced work required for the master of taxation.

The approved electives may include:

- Any 600-level taxation course not taken in the advanced courses or selected as a tax elective.
- Any 600-level accounting course except ACCT 608 and 678.
- Any approved 600-level advanced business or economics course.

## Ph.D. in Business Program

The Ph.D. in Business Program is designed specifically for individuals intending to fill positions at institutions that require a balance of scholarly training, teaching and practical application of the appropriate field of study. With its small size — the program has less than 40 students — it allows for extensive one-to-one interaction between students and faculty. Three areas of study are offered: accounting, information systems and management. Please note that admission to the management/organizational behavior major in the Ph.D. in Business have been suspended. New students are not being admitted to the

organizational behavior major in the Ph.D. in Business program.

A basic tenet of the Ph.D. in Business Program is that the classic trilogy of research, teaching and service typically invoked in university mission statements is synergistic. The program strives to develop graduates who share this perspective and aspire to well-rounded individual roles within universities, colleges and other learning organizations. For this reason, the program provides instruction in both research and teaching.

Instruction in basic and applied research is the cornerstone of the Ph.D. in Business Program. To fulfill the requirements for the degree, students must demonstrate successful completion of prerequisite and advanced courses, of comprehensive examinations in major and minor areas of study, and completion and defense of a dissertation. The advanced courses provide coverage in basic theories, methodologies and techniques needed to conduct research. The dissertation demonstrates the student's competence in conducting independent research.

Enhancement of teaching skills is emphasized in the program. It provides students with mentoring and teaching experience. Formal instruction designed to augment student teaching skills is also required. Mentoring involves teaming a student with a faculty member with the goal of augmenting student self-awareness and self-confidence in the classroom. Classroom experience is required to insure that the Ph.D. graduate enters the job market with certifiable teaching experience. The formal courses are designed to provide substantive instruction on teaching the adult learner.

A third aspect of the Ph.D. program is its emphasis on practical application in the area of study for students concentrating in accounting and information systems. In accounting, for example, emphasis is placed on projects based on real-world experience, and students are encouraged to develop papers around topics that address practical application of accounting concepts. In information systems, students usually work on projects brought in to the Information Systems Research Institute (ISRI). These projects focus on user applications and emphasize solutions to specific requirements.

### Admission requirements

Admission will be restricted to those who are considered by the School of Business Ph.D. Committee to possess academic and professional qualifications necessary to succeed in the program and to make a contribu-

tion to the profession. Criteria considered will include, among other things, performance at the bachelor's and graduate levels, GMAT scores, letters of recommendation, as well as both academic and business experience. Preference will be given to students who have fulfilled the general business prerequisites of the program. An interview is highly recommended. Applicants should contact the Graduate Studies in Business Office or the Ph.D. area coordinator for the applicant's intended major to schedule an interview. Admission to the doctoral program is highly competitive; consequently, qualified applicants may be denied admission because of insufficient space and resources. Applications should be completed by:

Fall Feb 15

### Prerequisite courses

Students are required to have a broad and in-depth exposure to the business disciplines prior to beginning their doctoral studies. Therefore, students are required to have completed at least one course at the master's level in each of the following areas: accounting, information systems, organizational behavior, quantitative management, financial management, marketing and economics. This requirement may be waived by the director of graduate programs in business for applicants possessing an M.B.A. degree from an AACSB (The Association to Advance Collegiate Schools of Business)-accredited institution. It also may be waived for applicants possessing a master's degree in a business discipline from an AACSB-accredited institution when the applicant has also completed the equivalent of the foundation courses required in VCU's M.B.A. program and a course in business policy. Students with deficiencies in these areas may be admitted and may matriculate; however, any deficiencies must be completed before beginning courses required in the doctoral program.

Students are required to have completed a minimum of one course that covers intermediate algebra and calculus prior to beginning the doctoral program. In addition, students may be required to take additional courses to cover any other deficiencies. Qualifying exams will be used, when appropriate, to determine the extent of the student's competency. Applicants should discuss the extent to which their background is sufficient with the Ph.D. area coordinator for the applicant's intended major.

Students majoring in organizational behavior must satisfy these specific prerequisites. The prerequisite context knowledge may be satisfied by previous completion of five courses (three credits each) at the undergraduate or graduate level from at least three of the following eight areas: operations management; statistics or quantitative methods; psychology, sociology or organizational behavior; finance; marketing; accounting; economics; information systems.

## Degree requirements for the Ph.D.

Each student must select a major in one of the following specialties:

- Accounting
- Information systems
- Organizational behavior

Additionally, students must select one different minor from the specialties listed above or the following:

- Decision sciences
- Economics
- Finance
- Human resource management and industrial relations
- International business
- Marketing
- An approved field outside the School of Business in a school or a department that offers a doctoral program. This option must have the approval of the Ph.D. committee and the director of graduate programs.

The following courses beyond those required at the master's level will be required for the Ph.D. degree.

### Accounting and information systems majors

GRAD 602 Seminar in College Teaching	credits
Research tools determined by each area	1
Six or seven courses in the major area	12
Four courses (12 semester credits) in the minor area	18-21
Dissertation research (minimum of 12 credits)	12
	12
	55-58

### Organizational behavior majors

Note: Admission currently suspended.

Quantitative techniques	credits
Major area	12
Research and teaching skills component	21
Teaching skills (3)	
Research methods (6)	
Theories and models component	
Seminars from Department of Management (9)	
Seminar from outside Department of Management (3)	

Minor area	9
Dissertation research	12
	54

A minimum of 12 semester credits in the major area and six credits in each of the minor areas must be completed at VCU after entry into the Ph.D. programs. Regular participation in a luncheon seminar series is also expected of Ph.D. students.

## Advising and evaluation

Each student will be assigned an adviser. The student's original program and any subsequent changes must be approved by the adviser and the director of graduate programs in business. A file will be maintained on all students in the Graduate Studies in Business Office where their progress will be monitored and coordinated. Each student is required to complete an approved program form and file it with the Graduate Studies in Business Office no later than the end of the first semester in which the student is admitted. Failure to do so may result in dismissal from the program.

## Ph.D. in Business Handbook

The School of Business publishes a handbook which provides a comprehensive overview of the policies and procedures involved in obtaining a Ph.D. in business at VCU. All procedures associated with the Ph.D. program are covered — from admission to graduation — with special emphasis placed on the dissertation process. Detailed information about financial support, comprehensive examinations, and dissertation proposals and defenses is included in the handbook.

## General requirements for the Ph.D.

In addition to the general academic regulations stated in the Graduate Studies at VCU chapter of this bulletin and the regulations listed earlier in this section for all students in graduate programs administered by the School of Business, Ph.D. students in the School are subject to the following requirements:

1. Students who fall below a 3.0 GPA will have one semester to make up that deficiency.
2. Students must register each semester (summer sessions excluded) for continuation in the program. Students who fail to register each semester will be dropped automatically from

the program and must reapply for reinstatement.

3. The maximum time to complete all the requirements for the degree is seven calendar years from the date of entry into the program. The maximum time to complete the course work, pass the comprehensive examination, and present an acceptable dissertation proposal is five years from the date of entry.
4. Doctoral study involves a devotion to independent study outside the classroom and interaction with the faculty and other students. During the period of advanced course work, students must complete at least nine credits each semester for a minimum of two consecutive semesters, one of which may be a summer session.
5. A maximum of nine semester credits may be transferred from another AACSB-accredited university and applied toward the Ph.D. course requirements. All transfer work must be at the "A" or "B" grade level. Transfer credit shall not be older than seven years at the time the Ph.D. degree is awarded. Transfer credit is given at the discretion of the director of graduate programs in business after consultation with appropriate departmental or faculty representatives.

## Post-baccalaureate Graduate Certificate in Real Estate and Land Development

The Graduate Certificate in Real Estate and Land Development is designed for professionals who seek an opportunity for advanced study in real estate and are more interested in the focused knowledge obtainable than receipt of a graduate degree. The certificate provides students the ability to advance their careers while receiving recognition of their academic accomplishment in the form of a graduate certificate. Many working professionals, especially those with undergraduate majors in Liberal Arts, will find this program attractive since they can concentrate their energies on a tightly focused curriculum without enrolling in a large number of prerequisite courses. The graduate certificate may be completed by taking both on-campus and internet based courses.

## Admission criteria

Applicants must have an earned baccalaureate degree or its equivalent from an accredited college or university. Other admission requirements include (1) proficiency in using spreadsheet computer software demonstrated either by examination or appropriate course and (2) minimum of 2.7 GPA at the undergraduate level. A minimum of five years of business experience is preferred. Students are expected to have completed FIRE 431 Advanced Real Estate Appraisal or its equivalent prior to beginning graduate course work.

## Certificate requirements

In order to be eligible for graduation with the certificate, a student must maintain an overall GPA of 3.0. Eighteen credit hours beyond the bachelor's degree is required for completion of this graduate certificate program. A maximum of one three-hour course taken at another AACSB-accredited institution may be transferred into this program. Students interested in later applying for admission into either the master of business administration with concentration in real estate and urban land development or the master of science in business with concentration in real estate valuation must do so through a separate application process. Admission is dependent on the applicant having achieved a 3.0 GPA in the graduate certificate and a satisfactory score on the GMAT examination.

Required courses	credits
FIRE 627 Real Estate Development	3
FIRE 629 Real Estate Investment Analysis	3
FIRE 638 Real Property Investment Law	3
FIRE 658 Real Estate Finance and Investments	3
FIRE 628 Using GIS in Real Estate Decisions	3
Plus one of the following courses:	
MGMT 655 Entrepreneurship	3
MRBL 674 Service Quality Management	
Total credits	18

## Post-baccalaureate undergraduate certificates

The School of Business at VCU offers post-baccalaureate certificates in five areas: accounting, human resource management, information systems, marketing, and real estate and land development. The post-baccalaureate certificate programs are designed for individuals who hold bachelor's degrees in other fields. By taking the courses required at the undergraduate level

in one of the certificate concentrations, individuals are able to obtain an extensive knowledge of the subject.

## Application information

Students cannot be accepted into a program until they have completed all the requirements for their bachelor's degree and have achieved at least a 2.5 GPA in their undergraduate work. Applicants to the information systems certificate program must have at least a 2.75 GPA in their undergraduate work. Applicants must submit an application and a nonrefundable fee of \$30. In addition, two official transcripts (bearing the university seal) from the institution granting the bachelor's degree should be sent directly to Graduate Studies in Business. International students must also submit current TOEFL scores and English translations of all transcripts. The deadlines for applications are:

Fall	Jul 15
Spring	Nov 15
Summer	Mar 15

Refer to the Undergraduate Bulletin for course descriptions.

1. Certificate recipients must have received an overall GPA of 2.5 ("C") on credit hours attempted for the certificate at VCU. The grades of "D" and "F" are counted in computing the overall GPA but carry no credit.
2. Students who fail to register for at least one course per semester in the program will be dropped automatically from the program and must reapply for admission to continue in the program. At that time some or all of the courses completed prior to the reapplication may not be accepted toward the certificate.

If unusual circumstances warrant it, a leave of absence for one semester may be obtained by requesting such a leave in writing from the director of graduate programs as early as possible but no later than the end of the first week of registration of the semester in which the absence is expected to occur.

3. Grades of "A," "B," and "C" are passing grades; "D" is not a passing grade. Students who receive a grade of "D" or below on more than 20 percent of the credit hours attempted for the program will be terminated from their program.
4. Courses in which students have earned a grade of "D" or "F" must be repeated if these courses are needed for the pro-

gram. Courses for which a passing grade was received cannot be repeated without written permission of the adviser and the director of graduate programs in business. The repeat course option in baccalaureate programs is not applicable to certificate programs.

5. Students who satisfy all the requirements except the 2.5 average may be allowed to take a maximum of six additional credit hours to raise the average. Students are required to get the approval of the adviser and the director of graduate programs in business.
6. Full-time certificate status consists of a minimum of 12 and a maximum of 18 undergraduate credits per semester.
7. Students must continually demonstrate acceptable professional behavior to be retained in the program.
8. All requirements for the certificate must be completed within five years from the date of admission or taking the first course in the program. This time limitation applies to both full- and part-time students. A maximum of two one-year extensions may be granted if satisfactory progress is demonstrated on the part of students requesting extensions. For extensions, write to the director of graduate programs in business.
9. The policies of the university regarding undergraduate degree programs will apply as the minimum when the certificate policy is not stated clearly in these policies. When in conflict, the stricter policy will apply in any case.
10. Students may not use the same course(s) for two certificates or the certificate and another program.
11. A maximum of six semester hours of acceptable undergraduate credit earned beyond the bachelor's degree (and not applied toward other completed degrees or certificates) may be transferred and applied toward the certificate program requirements. Such credits will be evaluated for acceptance upon written request from the student after completion of nine semester hours of work at VCU. No transfer credit can be given for courses completed prior to awarding the bachelor's degree regardless of whether the courses were taken beyond the minimum required for the bachelor's degree program, unless prior written permission was given by the director of graduate programs in business.

Transfer credit is made at the discretion of the director of graduate programs in business upon the recommendation of the student's adviser.

All transfer work must be at the "C" or higher grade level. Transfer credit must not be older than seven years at the time the certificate is awarded.

Credits to be earned at other institutions after acceptance in the program must be approved in advance, and approval is granted at the discretion of the director of graduate programs in business. Such work is approved under very unusual circumstances such as a job transfer to a new location over 100 miles from Richmond.

12. CLEP examination credit is not given for the certificate programs.
13. All students admitted to a certificate program are assigned advisers. Students are required to work with their advisers to plan their certificate programs. Each student program or changes thereto must be approved by both the adviser and the director of graduate programs in business. Courses taken prior to approval are taken at the student's own risk. Each student is required to complete an approved program form and file it with the Graduate Studies in Business Office no later than the end of the first semester in which the student is admitted. Failure to do so may result in dismissal from the program.
14. Students cannot be accepted in the certificate programs until they have completed all the requirements for their bachelor's degrees.
15. Students must apply to graduate using the Graduation Application Form. For deadlines, consult the university calendar.
16. Student appeals for exceptions to policies or academic standards may be made in writing to Virginia Commonwealth University, Director of Graduate Programs, School of Business, Richmond, VA 23284-4000.

### Post-baccalaureate certificate in accounting (PBC/ACC)

The post-baccalaureate certificate in accounting is designed for students who hold bachelor's degrees in fields other than accounting and desire to continue their education in another field but who do not aspire to a master's degree. Candidates for the certificate are required to complete a total of 48 hours and to meet other academic standards.

Of these 48 hours, at least 30 must be taken beyond the bachelor's degree, and at least 24 must be taken at VCU. Up to 18 credit hours of the courses may be waived if equivalent courses have been completed. All transfer credits and course waivers must be approved by the Department of Accounting and the director of graduate programs in business. Contact the department at (804) 828-1608 for a listing of courses.

Successful completion of the program provides numerous employment opportunities within both business and government organizations. Additionally, graduates are well qualified to sit for the Uniform Certified Public Accountant Examination in Virginia.

### Post-baccalaureate certificate in human resource management (PBC/HRM)

The post-baccalaureate certificate in human resource management is designed to increase the knowledge and skills of human resource practitioners, to prepare individuals who are seeking employment in the field, and to educate persons who desire more knowledge about human resource management. The PBC/HRM program is designed to provide advanced knowledge of human resource management (HRM). Specifically, persons completing the program are expected to achieve competency in understanding HRM terminology, concepts and principles; design and implement policies that are consistent with the organizational strategic plan; and develop procedures to accomplish organizational goals by obtaining and maintaining effective employees. Persons completing the program should have enhanced opportunities for employment in the HRM field.

A minimum of 30 semester credit hours must be earned in satisfying this certificate requirement, with a minimum of 24 semester hours of study required at VCU.

### Degree requirements for the PBC/HRM

Required courses	credits
FIRE 428 Employee Benefit Planning	3
FIRE 444 Occupational Safety, Health and Security	3
MGMT 331 Human Resource Management	3
MGMT 420 Seminar in Industrial Relations	3
MGMT 433 Compensation Management	3
MGMT 435 Strategic Human Resource Management	3
MRBL 427 Labor and Employment Relations Law	3
	21

### Electives

Choose three of the following courses\*  
 ADLT 403 Human Resource Development  
 ECON 431 Labor Economics  
 MGMT 446 International Human Resource Management  
 MGMT 447 Human Resource Information Systems  
 PSYC 310 Industrial Psychology

Total	30
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\* Any prerequisites also must be satisfied.

### Post-baccalaureate certificate in information systems (PBC/IS)

The post-baccalaureate certificate in information systems is designed for students who hold bachelor's degrees in fields other than information systems and who desire to continue their education in information systems but do not aspire to a master's degree. Candidates for the certificate are required to complete a total of 30 hours beyond the bachelor's degree, including the courses listed below or their equivalents, with a minimum of 24 credit hours of study in information systems to be taken at VCU.

The PBC/IS program is designed to provide more than a basic knowledge of information systems. Specifically, persons completing the program are expected to achieve competency in understanding information systems terminology, concepts and principles; computer program design, writing and testing; systems analysis/design through proper application and knowledge of current hardware and software; and planning and carrying out system development and the management of information systems. Those students acquiring these skills are well received in the business community and in governmental organizations.

### Prerequisite courses

INFO 250 Introduction to Programming  
 INFO 350 Intermediate Programming  
 (corequisite for INFO 300)

### Required courses

INFO 300 Computer Hardware and Software	3
INFO 350 Intermediate Programming	3
INFO 360 Business Information Systems	3
INFO 361 Systems Analysis and Design	3
INFO 370 Fundamentals of Data Communications	3
INFO 464 Database Systems	3
INFO 465 Projects in Information Systems	3
B. Selections from one of the following tracks	9
<b>Total</b>	<b>30</b>



### 1. Application Development

The application development track is intended for those students interested in the development of object-oriented, graphic user interface (GUI) based, distributed applications. These include Internet based E-business applications with GUI front ends and database back ends.

INFO 450 Advanced Programming	3
INFO 462 Java Support for E-business	3
Approved elective	3

### 2. Network Management

The network management track is intended for those students interested in the implementation and management of local and wide area networks. It emphasizes the network aspects of the implementation environment.

INFO 472 LAN Administration	3
INFO 474 Internetworking and TCP/IP	3
Approved elective	3

### 3. Information Engineering

The information engineering track focuses on the development of comprehensive approaches to information systems development as a part of organizational strategic planning. Consequently, prior approval by the track coordinator is required and it is offered only to students who are able to demonstrate significant work experience in one or more of the following areas:

- analyzing/designing systems
- planning/managing information technology development projects
- planning/managing organizations from a strategic perspective

INFO 461 Information Systems Planning	3
INFO 463 Re-engineering Technology in Organizations	3
INFO 468 Information Engineering	3

#### Elective courses for Application Development Track

ACCT 205 Introductory Accounting Survey	3
INFO 461 Information Systems Planning	3
INFO 472 LAN Administration	3
INFO 491 Topics in Information Systems	3
INFO 492 Independent Study	3
INFO 493 Internship	3

#### Elective courses for Network Management Track

ACCT 205 Introductory Accounting Survey	3
INFO 450 Advanced Programming	3
INFO 461 Information Systems Planning	3
INFO 491 Topics in Information Systems	3
INFO 492 Independent Study	3
INFO 493 Internship	3

Note: INFO 250 Introduction to Programming is a prerequisite for INFO 350. INFO 250 cannot be used as an elective within the information systems major, but may be used in the Business Foundation Program under the category "Business and/or non-business electives."

### Post-baccalaureate certificate in marketing (PBC/MKT)

The post-baccalaureate certificate in marketing program is designed for persons who already have earned a baccalaureate

degree in fields other than marketing, yet desire an extensive and current knowledge of marketing. Graduates will recognize 1) the cross-functional nature of today's business environment, and 2) the growing importance of the customer orientation in all organizations, public and private, profit and nonprofit, domestic and global.

Candidates for this certificate must complete 30 credit hours, with a minimum of 24 hours to be completed at VCU. Eight specific three-hour courses in marketing at the 300 and 400-level are required, and the student may select the six additional hours from a list of restricted electives. Prerequisites for all required and elective courses must be met.

#### Degree requirements for the PBC/MKT

Required courses	credits
MRBL 308 Introduction to Marketing	3
MRBL 310 Information for Marketing Decisions	3
MRBL 371 Integrated Marketing Communications	3
MRBL 372 Project Development and Management	3
MRBL 373 Buyer Behavior	3
MRBL 378 International Marketing	3
MRBL 475 Services Marketing	3
MRBL 476 Marketing Management*	3
	24

#### Electives

Students will select two of the following courses:	6
ECON 210 Principles of Economics (micro)**	
MGMT 301 Business Statistics	
MRBL 376 Dynamics in Retail Management	
MRBL 474 Personal Selling and Sales Management	
MRBL 478 Global Internet Marketing	
MRBL 491 Topics in Marketing and Business Law (Marketing Topic)	
MRBL 493 Marketing Internship	
Total	30

\* MRBL 476 must be taken after completing 15 credit hours of marketing courses.

\*\* ECON 210 is required of students who transfer three hours of credit for an Introduction to Marketing or Principles of Marketing course from another institution where Principles of Economics is not a prerequisite to the introductory course.

### Post-baccalaureate certificate in real estate and land development

The post-baccalaureate certificate in real estate and land development is designed for persons who already have earned a baccalaureate degree in fields other than real estate and urban land development, yet do not desire to work toward a graduate degree in this field. Aspiring real estate brokers are required to take four of the 10 courses to satisfy their broker educational require-

ments. By taking only another six additional courses, real estate agents will have the opportunity to increase their business and managerial proficiency through a cohesive program of study at the university level. The certificate program is popular for other professionals, such as appraisers or mortgage lenders, who desire to enter a coordinated real estate studies program.

A minimum of 30 semester credit hours must be earned in satisfying this certificate requirement, with a minimum of 24 semester hours of study required at VCU.

Required courses	credits
FIRE 317 Real Property Management	3
FIRE 318 Real Estate Negotiating	3
FIRE 326/MRBL 326 Real Estate Law	3
FIRE 423 Real Estate Brokerage	3
FIRE 425 Real Estate Appraisal	3
FIRE 429 Real Estate Finance	3
	18
Electives	12
	30

#### Approved electives

Select 12 credit hours from the following courses, being certain to have satisfied all prerequisites:

ACCT 205 Introductory Accounting Survey	3
ENVS 491 Topics in Environmental Studies	1-3
FIRE 311 Financial Management	3
FIRE 424 Property and Liability Insurance	3
FIRE 431 Advanced Real Estate Appraisal	3
FIRE 437 Funds Management in Financial Institutions	3
INFO 160 Introduction to Windows/DOS-Based Operating Systems	1
INFO 161 Introduction to Microcomputer-Based Word Processing Packages	1
INFO 162 Introduction to Microcomputer-Based Spreadsheet Processing Packages	1
INFO 163 Basic Computer Programming	1
MGMT 421 Small Business Management	3
MRBL 324 Legal Aspects of the Management Process	3
MRBL 371 Integrated Marketing Communications	3
URSP 525 Site Planning and Graphics	3

### Graduate courses in business and economics

The courses listed below are grouped into seven categories: accounting; economics; finance, insurance and real estate; fast track M.B.A.; information systems; management; marketing and business law.

Courses at the 500 level may not be included in the 30 semester credits of

advanced work required of any of the master's degrees offered by the School of Business.

## **Graduate courses in accounting (ACCT)**

### **ACCT 506 Auditing**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 304 or equivalent with grade of "C" or higher. This course examines conceptual content and practical procedures applicable to auditing, both external and internal. Primary emphasis is placed on the theory of audit evidence; the objectives, methods and procedures for audits of financial statements; and the meaning of the various audit reports. The content also includes statements on auditing standards, attest standards and statistical sampling applications.

### **ACCT 507 Fundamentals of Accounting**

Semester course; 3 lecture hours. 3 credits. Theoretical and technical facets of financial and managerial accounting for business. This is a graduate foundation course.

### **ACCT 513 Financial Reporting**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: A grade of "C" or higher in ACCT 304. Financial auditing for complex business relationships, including business combinations, acquisitions and mergers, consolidated financial statements, restatement of foreign financial statements and partnership accounting. Emphasis is on current issues confronting accountants and financial reporting and the potential impact of these issues on business entities.

### **ACCT 601 Financial Accounting Theory**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: 21 credits in accounting or permission of instructor, including ACCT 304 or equivalent. The historical development of accounting thought and the way it has been influenced by social, political, and economic forces. Analysis of the structure and methodology emphasizes objectives, postulates, and principles. Income determination and asset equity valuation, in both theory and practice.

### **ACCT 602 Managerial Accounting Theory**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: 21 semester credits in accounting (or permission of instructor) including ACCT 306 or equivalent. Advanced aspects of the use of accounting information in the management process. Cost-based decision making and control systems are related to short- and long-term objectives of the firm.

### **ACCT 603 Environment of Accounting**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: 21 credits in accounting, (or permission of instructor). The organization of the profession and accounting standard-setting bodies. Areas covered will include FASB, AICPA, SEC, other governmental regulatory agencies and current and emerging accounting issues and pronouncements.

### **ACCT 604 Auditing**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: 21 semester credits in accounting (or permission of instructor) including ACCT 406 or equivalent. Development of auditing theory, special disclosure issues, statistical sampling, ethical, legal, and social

responsibilities of external and internal auditors. Emphasis on contemporary topics in auditing.

### **ACCT 605 Governmental and Not-for-Profit Accounting**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 507. Budgeting, accounting, reporting, and related issues and pronouncements for governmental and not-for-profit organizations.

### **ACCT 606 International Accounting**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 507. International dimensions of accounting; national differences in accounting thought and practice; problems and issues.

### **ACCT 608 Managerial Accounting Concepts**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 507 or equivalent. The use of accounting information contained in reports to management. The functions of planning, decision making, and control are studied as accounting data are reported through the firm's information system and in special analyses.

### **ACCT 609 State and Local Taxation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 405 or equivalent. Examination of the tax problems and planning opportunities inherent in state and local taxation, with emphasis on the problems of interstate business operations.

### **ACCT 662 Accounting Systems**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: ACCT 507 and either ACCT 307, INFO 360, or INFO 560 or equivalent. Study of accounting systems, concepts, and applications with reference to actual problems encountered in the analysis, design, implementation, use, audit, and evaluation of accounting systems in a computer environment.

### **ACCT 678 Accounting Controls for Not-for-Profit Organizations**

Semester course; 3 lecture hours. 3 credits. This course is for non-business students who have a need to understand and use accounting information in their professions. The basics of compiling and analyzing financial information for governmental and other not-for-profit entities will be reviewed. In addition, the use of accounting as a control method in these entities will be studied. Students will be required to investigate ways accounting relates to their particular areas of interest. May not be included in the 30 semester credits of advanced work required for any of the master's degrees offered by the School of Business.

### **ACCT 679 International Taxation**

Semester course; 3 lecture hours. 3 credits. Prerequisite: 24 semester credits in accounting (or permission of instructor) including ACCT 682 or equivalent. Problems of international taxation and business tax planning approaches. Tax implications of exporting and manufacturing abroad, foreign losses, and repatriation of earnings.

### **ACCT 680 Tax Research**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: 21 semester credits in accounting (or permission of instructor) including ACCT 405 or equivalent. Tax research methodology; the sources of tax law and their relationship to tax research.

### **ACCT 681 Tax Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. The Internal Revenue Service

and the practices and procedures involved and/or available for the settlement of tax controversies and common elections of accounting methods.

### **ACCT 682 Corporate Taxation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 405 or equivalent. Corporate tax laws as related to the corporations involved and to individual shareholders; tax aspects of the creation, operation, reorganization, and partial liquidation of corporations; corporate distributions.

### **ACCT 683 Taxation of Reorganizations**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 682. Continuation of the study of corporate taxation, with emphasis on corporate liquidations and reorganizations as well as collapsible corporations.

### **ACCT 684 Partnership Taxation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 405 or equivalent. Tax problems related to organization, operation, and liquidation of a partnership. Also, tax problems of Subchapter S corporations, tax-exempt organizations, private foundations and other special corporate forms.

### **ACCT 685 Taxation of Property Transactions**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 405. Tax problems and elections relating to acquisition, holding, and disposition of property. Tax planning in relation to comparisons of sales and exchanges as methods of acquiring and disposing of property; study of Section 1245, 1250, and 1231.

### **ACCT 686 Taxation of Pensions/Deferred Compensation**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 682. Tax law as related to pensions, profit-sharing, and deferred compensation plans, and the tax consequences related thereto for individuals and businesses.

### **ACCT 687 Fiduciary Income Taxation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 688. Estate planning as it encompasses the acquisition, protection, and disposition of property; the role of the accountant in estate planning. Tax planning will be stressed.

### **ACCT 688 Estate and Gift Taxation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 405 or equivalent. Concepts of gross estate, marital deduction, powers of appointment, gross gifts, exclusions, deductions, and credits; tax aspects of estate planning.

### **ACCT 689 Estate Planning**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 688. Estate planning as it encompasses the acquisition, protection, and disposition of property; the role of the accountant in estate planning.

### **ACCT 690 Research Seminar in Accounting**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs in business. This course is designed to provide research experience for candidates not following the ACCT 798-799 program.

### **ACCT 691 Topics in Accounting**

Semester course; 1-3 lecture hours. 1, 2, or 3 credits.  
Study of current topics. Topics may vary from semester to semester.

**ACCT 693 Field Project in Accounting**

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

**ACCT 697 Guided Study in Accounting**

Semester course; 3 lecture hours. 1, 2, or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

**ACCT 790 Doctoral Seminar**

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Analyzes and critiques general theories, practices and functions in a specialized area of accounting research.

**ACCT 791 Doctoral Seminar: Managerial Accounting**

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Presents contemporary issues in managerial accounting and auditing research.

**ACCT 792 Doctoral Seminar: Financial Accounting**

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Presents and analyzes contemporary issues in financial accounting.

**ACCT 794 Doctoral Seminar: Research Methods in Accounting**

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Provides knowledge and skills for advanced accounting research.

**ACCT 798-799 Thesis in Accounting**

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

**ACCT 898 Dissertation Research in Accounting**

1-12 credits. Limited to Ph.D. in business candidates.

**Graduate courses in economics (ECON)****ECON 500 Concepts in Economics**

Semester course; 3 lecture hours. 3 credits. Not open to students who have completed ECON 210 and 211 or the equivalent. Essential economic concepts including the price system, price determination in imperfectly competitive markets, employment theory, and monetary theory. This is a foundation course.

**ECON 604 Advanced Microeconomic Theory**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate course in intermediate microeconomic theory or theory of the firm. Theory of prices and markets; value and distribution. Partial and general equilibrium analysis.

**ECON 605 Economic Development**

Semester course; 3 lecture hours. 3 credits. Prerequisite: 12 semester hours of economics. Examination of prob-

lems of poverty and economic policies in developing countries. Areas considered are Southeast Asia, Middle East, Africa, and Latin America.

**ECON 606 Urban Economic Problems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. A study of the location of economic activity, zoning, blight and unemployment, urban renewal, and redevelopment programs.

**ECON 607 Advanced Macroeconomic Theory**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate course in macroeconomic theory. National income analysis, monetary and fiscal theory and policy, and general equilibrium analysis.

**ECON 609 Advanced International Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. An advanced-level examination of why trade occurs, balance of payments concept and adjustment, international equilibrium, forward exchange, markets, international investment, and international organizations.

**ECON 610 Managerial Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. Analysis of business decisions, applying tools of economic theory. Decisions on demand, production, cost, prices, profits, and investments.

**ECON 612 Econometrics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 401 or equivalent or permission of instructor. Provides empirical content to the theoretical concepts of the economics by formulating and estimating models. Introduction to simultaneous equation problems in economics and the studies of production, demand, and consumption functions.

**ECON 614 Mathematical Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 403 or equivalent or permission of instructor. Economic analysis utilizing simple mathematical methods. Includes derivation and exposition of theories and the application of tools to widen the scope and increase the usefulness of economics.

**ECON 616 Advanced Public Finance**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent or permission of instructor. Theory and application of public finance, including taxation, expenditures, and budgeting. Special attention to cost-benefit analysis and to inter-governmental relations in federal system.

**ECON 617 Financial Markets**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Money and banking or intermediate macroeconomics. Theories of markets for loanable funds are related to empirical findings and institutional structures. Yields of financial assets, kinds of debt instruments, financial institutions, public policy, financial models, and the role of money and credit in economic growth are considered.

**ECON 620 The Economics of Industry**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 301, 303, or 610, or the equivalent. The application of economic analysis to the structure, conduct, and performance of industry; public regulation and policies to promote workable competition.

**ECON 621 Topics in Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 500 or equivalent and permission of instructor. Study of specialized topic(s) in economics.

**ECON 623 Anomalies in Financial Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 617 and ECON 401 or equivalent. Considers anomalies, or evidence that is inconsistent with or difficult to explain using received theory in economics. Studying anomalies is useful both to develop a better, subtler understanding of received theory and to recognize how the theory may be refined or changed to resolve the anomalies. Anomalies considered include the equity premium puzzle, excess-volatility, over-reaction and under-reaction of asset prices, and asset allocation puzzles. In some cases a proposed anomaly can be explained by more careful treatment of the problem. In other cases, new theories (e.g., noise-trader models) are put forward to explain anomalies.

**ECON 624/HADM 624 Health Economics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources, and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial or controversial economic issues in the health field.

**ECON 631 Labor Market Theory and Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 600 or one year undergraduate principles of economics. The study of theories and applications designed to analyze wage rate, wage structure, and employment patterns. Studies exploring specific labor markets and problems will be examined.

**ECON 641 Econometric Time-series Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 612. Provides the analytical and programming tools needed to adeptly handle the statistical analyses of econometric time-series data. Topics include: stationarity, unit-roots, univariate time-series models, Vector Autoregressions (VARs), and co-integration. These tools will be used to analyze movements in interest rates, exchange rates and equity markets as well as the transmission of monetary policy actions.

**ECON 642 Panel and Nonlinear Methods in Econometrics**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 612. Includes panel data analysis (fixed and random effects); identification and estimation of nonlinear models, limited dependent variable models (probit, logit, tobit, etc.), duration models; and hypothesis/specification tests. The techniques discussed in class will be used to analyze a variety of empirical questions. The course has an applications rather than a theoretical focus.

**ECON 682 An Economic Approach to Environmental Issues**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. The effect of externalities in terms of efficiency and equity considerations. The role and problems of benefit-cost analysis in decision making is developed. The interrelationship of air, water, and land quality issues is analyzed. The use rate of natural resources, energy consumption, and the steady-state economy and their impacts are evaluated.

**ECON 690 Research Seminar in Economics**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: ECON 604, 607, and 612. Familiarizes students with various research methodologies and research techniques, and provides in an elected field of economics, research experience and a survey of the literature.

**ECON 691 Topics in Economics**

Semester course; 1-3 lecture hours. 1, 2, or 3 credits.  
Study of current topics. Topics may vary from semester to semester.

**ECON 693 Field Project in Economics**

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

**ECON 697 Guided Study in Economics**

Semester course; 3 lecture hours. 1, 2, or 3 credits.  
Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

**ECON 798-799 Thesis in Economics**

Year course; 6 credits. Prior to enrollment, approval of the proposed work is required by the graduate adviser and the proposed thesis adviser. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

**Graduate courses in finance, insurance and real estate (FIRE)**

**FIRE 520 Financial Concepts of Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: ACCT 507 or equivalent. Pre- or corequisite: MGMT 524 or equivalent. Not open to students who have completed FIRE 311 or the equivalent. A study of the essential concepts of financial management including working capital management, capital budgeting, capital structure planning, and dividend policy. This is a foundation course.

**FIRE 533 Insurance Education Institute for High School Teachers**

3 credits. This is a summer course designed for high school teachers in such fields as business, marketing, economics, mathematics, social sciences, history, life skills, home economics, or other disciplines in which the subject of risk and insurance can be incorporated into the curriculum. Teachers will learn about risk management, life, health, auto, homeowners insurance and financial planning. They will receive instructional materials and guidance to develop lesson plans for their use in teaching the subject to their students.

**FIRE 621 Cases in Financial Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: FIRE 520 or equivalent. Analysis of financial problems and policies of nonfinancial firms, including capital management, capital rationing and cost of capital, and capital structure.

**FIRE 622 Financial Management of Financial Institutions**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: FIRE 520 or equivalent. Understanding and application of concepts relevant to the financial management of financial institutions.

**FIRE 623 Financial Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: FIRE 520 or equivalent. Analyzes the theory and practice of corporate finance. Detailed investigation of the investment and financing decision of the firm in an environment of uncertainty.

**FIRE 625 Group Insurance and Pension Planning**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: FIRE 520 and MRBL 530 or equivalents. Analysis of major elements of employee benefit plans including: life, health and disability benefits, pension, and profit-sharing plans. Design principles, financing, legal, and tax considerations are examined. Major issues and new developments. Courses directly related to risk, insurance and employee benefits are approved for Virginia Insurance Continuing Education. Forty-two credits for insurance agents. Contact the director of insurance studies for further information.

**FIRE 626 Risk Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: FIRE 520, MRBL 530, and MGMT 524 or equivalent. Property and liability risks faced by businesses and public institutions are studied. Insurance and alternative methods of controlling and financing these risks are analyzed and compared. Courses directly related to risk, insurance and employee benefits are approved for Virginia Insurance Continuing Education. Forty-two credits for insurance agents. Contact the director of insurance studies for further information.

**FIRE 627 Real Estate Development**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Permission of instructor. A study of the development process; including market analysis, site selection, pre-acquisition strategic planning, and project management.

**FIRE 628 Using GIS in Real Estate Decisions**

Semester course; 3 lecture hours. 3 credits. Acquaints students with Geographic Information Systems technology as a means of selecting and comparatively analyzing prospective sites. Students will use GIS software in making location decisions.

**FIRE 629 Real Estate Investment Analysis**

Semester course; 3 lecture hours. 3 credits. Housing demand forecasting, commercial site selection, and real estate investment analysis.

**FIRE 635 Investments and Security Analysis**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: FIRE 520 and MGMT 524 or equivalent. The process of investing in stocks and bonds, from the analysis of individual securities to portfolio formation and evaluation.

**FIRE 638 Real Property Investment Law**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MRBL 323 or equivalent, or permission of instructor. Covers legal aspects of real property development from acquisition through disposition; emphasis

sizes selection of appropriate ownership form, financing, operation, and tax considerations.

**FIRE 639 International Finance**

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 or equivalent. A study of financial management of multinational enterprises, banks, firms with foreign subsidiaries, exporters, and service industries. Additionally, financing trade and investments, international money and capital markets, foreign exchange risks, and governmental policies will be covered.

**FIRE 650 Derivatives**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: FIRE 520 or equivalent. Analysis of derivatives contracts: forwards, futures, swaps, and options. Study of valuation and pricing, and how to use derivatives to manage financial price risk.

**FIRE 654 Short Term Financial Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: FIRE 520 or equivalent. Techniques of short term financial management (or working capital management) for business firms, including efficient cash management of accounts receivable, management of inventory, management of accounts payable, and short-term borrowing from banks and other suppliers of short-term credit.

**FIRE 657 Current Issues in Investments and Markets**

3 lecture hours. 3 credits. Prerequisite: FIRE 635. Advanced study of selected topics in investments and securities markets. Topics selected by the instructor. Readings from recent journals, cases, and/or software may be used. Possible topics may include: fixed income mathematics; portfolio management; advanced investments theory; factors explaining security price movements; advanced security analysis; using information to make investment decisions; and security market microstructure.

**FIRE 658 Real Estate Finance and Investments**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: FIRE 431 or permission of instructor. Emphasizes economic and financial analysis of commercial real estate investments, alternative financing structures and surveys recent trends in the securitization of commercial real estate debt and equity markets.

**FIRE 664 Current Issues in Corporate Finance**

3 lecture hours. 3 credits. Prerequisites: FIRE 621 or FIRE 623. Advanced study of selected topics in corporate finance and financial management. Topics selected by the instructor. Readings from recent journals, cases and/or software may be used. Possible topics include: theory and evidence concerning major corporate financial policy decisions, bankruptcy costs and agency costs that relate to capital structure and dividend policy, issues in corporate control, alternative methods of issuing and retiring securities mergers and acquisitions, advanced valuation theory, advanced financial analysis, advanced capital budgeting, using information to make financial decisions.

**FIRE 690 Research Seminar in Finance, Insurance and Real Estate**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the FIRE 798-799 program.

**FIRE 691 Topics in Finance, Insurance and Real Estate**

Semester course; 1-3 lecture hours. 1, 2, or 3 credits. Study of current topics. Topics may vary from semester to semester.

**FIRE 693 Field Project in Finance, Insurance and Real Estate**

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

**FIRE 697 Guided Study in Finance, Insurance and Real Estate**

Semester course; 3 lecture hours. 1, 2, or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

**FIRE 758 Theory of Finance**

Semester course; 3 lecture hours. 3 credits. Prerequisites: All foundation courses, 12 hours of graduate business courses, and two advanced finance courses including FIRE 623 or permission of chair. Advanced discussion of the theoretical underpinnings of modern financial theory as applied to choice under uncertainty and efficient capital markets. Includes a detailed analysis of state-preference theory, mean-variance uncertainty and market equilibrium. In depth investigation of the seminal empirical findings as pertains to capital structure and dividend policy.

**FIRE 759 Portfolio Theory and Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 and FIRE 635 or equivalent. A study of current theory of valuation and performance of portfolios, focusing on models to express the risk/return characteristics of the portfolio. Includes models for portfolio selection and for evaluation of managed portfolios.

**FIRE 798-799 Thesis in Finance, Insurance and Real Estate**

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

**Courses in fast track master of business administration (FMBA)****FMBA 601-602 (Module 1): Foundation Building and Organizational Culture**

6 credits. Presents how organizations develop and operate. Meanings and management of culture and protocol; design and transformation of technologies, structures, behaviors, and careers with organizational environments are developed and integrated across disciplines.

**FMBA 603-605 (Module 2): Analysis and Decisions**

9 credits. Presents how organizations define and choose. Concepts and tools of problem solving for administrative decisions; concepts and tools of meas-

urement, planning, and control; management of conflict, cooperation, negotiation, and implementation are developed and integrated across disciplines.

**FMBA 606-607 (Module 3): Teambuilding and Leadership**

6 credits. Presents how organizations steer members toward what needs doing. Design, functions, and creation of teams, engaging leadership and motivation processes to set and achieve organizational goals; management of emerging communication and evaluation processes; interacting with boards and with customers are developed across disciplines.

**FMBA 608 (Module 4): Global Challenges**

3 credits. Presents an educational tour for direct experience of influences and perspectives: France, Great Britain, Indonesia, or Mexico.

**FMBA 609-610 (Module 5): Productivity and Innovation**

6 credits. Presents how organizations change and improve. Management of creativity, critical thinking, and rewards; development of resources; implementing concepts of quality, effectiveness, and change are developed across disciplines.

**FMBA 611-613 (Module 6): Strategic Management**

9 credits. Presents how organizations define, plan, and accomplish missions. Comprehensive integration of business functions and processes; systems thinking, managing shareholder value; anticipating and interacting with changing internal and external environments; formulation and implementation of strategy and integrated across disciplines.

**Graduate courses in information systems (INFO)****INFO 610 Analysis and Design of Database Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 464 or equivalent. Designed to prepare students for the development of information systems using databases and database management techniques.

**INFO 611 Data Re-engineering**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 610 and INFO 630. Covers basic issues in re-engineering of data from network and hierarchical and other database structures into relational database structures. Also covers a range of methods, tools and techniques for reverse engineering existing schemas and data structure definitions to derive entity relationship (ER) models. ER models also are used as the basis for designing relational database structures. Appropriate case tools for data re-engineering provide students with practical experience.

**INFO 614 Data Mining**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 464 or INFO 610. A data mining process has the goal of discovering nontrivial, interesting and actionable knowledge from data in databases. The course introduces important concepts, models and techniques of data mining for modern organizations. Students gain a deeper understanding of concepts and techniques covered in lectures by doing a practical term project that applies one or more of the data mining models and techniques. Students also are given the

opportunity to gain knowledge on the features and functionalities of state-of-the-art data mining software through their preparation of a research report.

**INFO 616 Data Warehousing**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 610. Covers important concepts and techniques in the design and implementation of a data warehouse. Topics include: the data warehouse architecture, the logical and physical design issues in the data warehousing development process, technical factors (i.e., hardware, client/server technology, data warehousing and DBMS technologies) and implementation considerations (i.e., data extraction, clean-up and transformation tools). Introduces Online Analytical Processing (OLAP) and Data Mining.

**INFO 619 Computer Assisted Simulation**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Knowledge of computer programming and MGMT 524 or equivalent. Investigates the concepts and applications of different types of computer-assisted simulation modeling approaches. Includes experimental design, systems modeling, programming in a simulation language, and model validation. Emphasis will be on discrete simulation techniques in a business environment.

**INFO 620 Data Communications**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 370 or equivalent. Computer network design, communication line control, and communication hardware and software.

**INFO 622 Network Administration I**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 620. Studies the TCP/IP protocols and fundamental concepts of Network Operating Systems (NOS). Studies functions and services provided by NOS in addition to TCP/IP architecture and configuration on various NOS. The course also provides practical administrative NOS experience.

**INFO 624 Network Administration II**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 620. Covers advanced topics in network administration including disaster recovery, security and cryptography, and implementing advanced services.

**INFO 626 Systems Performance Evaluation**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 620 and MGMT 524. Methodology and use of hardware and software tools for the evaluation of computer-based information systems including people and machine productivity.

**INFO 628 Database and System Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 620. Exposes students to various system administration issues, especially as those systems exist in Enterprise Resource Planning (ERP) environments. Focuses on database administration and system administration. Also covers data security, user administration, data administration, recovery, backup, disaster planning and configuration management. The students will gain hands-on experience in administering databases and ERP systems.

**INFO 630 Information Engineering**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361 and INFO 464. This course covers business process and data modeling for information require-

ments analysis specification. The process-modeling segment will cover advanced methods and techniques for the analysis and specification of business processes. Techniques for the modeling, analysis and derivation of generic procedures will include procedure mapping and logic normalization. Students will gain hands-on experience with advanced CASE tools.

#### **INFO 632 Business Process Engineering**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 661 or INFO 640 or equivalent. Critically reviews business process (re)engineering methods and practices. The discipline of Business Process and Application Architectures and modularization are examined. Issues in the implementation of application support for business processes are discussed. The discussion includes strategy visioning, performance benchmarking, process modeling and analysis, and planning organizational change. State-of-the-art business engineering tool-sets such as SAP Business Engineer and J.D. Edwards Business Engineering tool-sets are extensively used to provide practical experience.

#### **INFO 634 Application Engineering**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 630 and INFO 632. Covers a model-driven approach to application development and implementation based on business scenarios and business process modeling. This approach allows for the engineering, configuration and integration of business applications from preexisting repository of modules (code and data structures). Students will get hands-on experience with state-of-the-art application configuration tool-sets such as SAP/R3 ABAP Development Workbench and Business Engineer and J.D. Edwards Case Foundation.

#### **INFO 640 Information Systems and Knowledge Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 360 or equivalent. A detailed study of the issues, principles, techniques and best practices in managing information systems and enterprise knowledge as organizational resources. Managing enterprise knowledge and information systems involves taking a disciplined approach to managing the infrastructures and harnessing the collective knowledge capital and brain-power of individuals and organizations. Topics include: IT operations, issues in strategic management, establishing standards and procedures, performance evaluation and benchmarking, hardware and software acquisition, physical environments and security issues, outsourcing and partnerships, personnel, knowledge ontology, meta-knowledge and others.

#### **INFO 642 E-business Intelligence**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 610, INFO 614, INFO 630. Focuses on state-of-the-art business intelligence techniques for supporting the efficient and effective operation of e-business in its interaction with the customers, suppliers and other trading partners.

#### **INFO 653 Decision and Control Systems**

Prerequisite: INFO 656 or equivalent. Designed to familiarize students with the state-of-the-art system configurations, including intelligent, real-time, distributed, and command-control systems.

#### **INFO 654 E-business Interface Design**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 640 or INFO 661. Analyzes factors important

in designing the interface for e-business systems. Designs and develops systems for the Internet. Requires students to work in teams to produce prototype interactive systems.

#### **INFO 656 Computer Supported Collaborative Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 661 or INFO 640. Investigates how technology is used to support group communication, collaboration and decision making and will be organized around the traditional and innovative ways groups work together to accomplish their tasks. Explores current and future collaborative technologies.

#### **INFO 657 Integrating ERP and E-business Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 610, INFO 630. Covers the basic principles and techniques of integrating e-business applications in Enterprise Resource Planning environments. Focus is on how e-business applications are configured at the customer-interface and supplier-interface of the ERP infrastructure of a large distribution company.

#### **INFO 658 Electronic Commerce**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 661 or INFO 640. Overviews the emerging field of electronic commerce with emphasis on how information technologies and networks will change the exchange of goods and services in the 21st century. Specific topics include technological infrastructures, types of applications, key policy issues and future trends. Students are evaluated through case study analysis and research, readings, short papers and a class project.

#### **INFO 659 E-commerce Systems Architecture Development**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 620, INFO 658. Students will create, develop and deploy e-commerce systems, using a three-tier architecture: Web client, Web server and database server. Students will learn how to create effective front-end interfaces for the Web browser as well as product catalogs, shopping carts and database records of customers and their orders for complete e-commerce transactions.

#### **INFO 661 Information Systems for Managers**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Completion of all M.B.A. foundation courses or equivalent. This course is restricted to M.B.A. students and must be taken concurrently with MGMT 641. Provides an understanding of the importance and role of information systems in modern business decision making. Emphasizes choices about information technology and managing projects.

#### **INFO 664 Emerging Issues in Information Technology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 641 and INFO 661. This course is restricted to M.B.A. students and must be taken concurrently with MGMT 675. An investigation of the current and emerging issues in information technology and its role in organizations.

#### **INFO 690 Research Seminar in Information Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the INFO 798-799 program.

#### **INFO 691 Topics in Information Systems**

Semester course; 1-3 lecture hours. 1, 2, or 3 credits. Study of current topics. Topics may vary from semester to semester.

#### **INFO 693 Field Project in Information Systems**

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

#### **INFO 697 Guided Study in Information Systems**

Semester course; 3 lecture hours. 1, 2, or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

#### **INFO 700 Principles of Scientific Inquiry in Business**

3 lecture hours. 3 credits. A seminar on the philosophical and epistemological foundations of scientific inquiry as they relate to research in business and its allied disciplines. The focus will be on the underlying logic, elements, reach and limits of alternative frameworks such as positivism, empiricism, and Bayesian analysis and the conditions under which each is the preferred method of inquiry.

#### **INFO 710 Database Systems and Data Administration**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 610 or equivalent. Explores advanced concepts related to the management of modern organizations' data resources. Focuses on data administration and the technical aspects of database systems. The objective is to provide an intellectual foundation for students wishing to write a doctoral dissertation on a subject matter related to any of the topics covered. Students are required to read and analyze articles considered fundamental to the current understanding of the topics covered.

#### **INFO 720 Electronic Communication and Telecommunication**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 620 or equivalent. An in-depth analysis of the state of the art in telecommunications and how they are used for networking, collaboration, intra-organizational and the inter-organizational communication needs. The objective is to provide an intellectual foundation for students wishing to write a doctoral dissertation on a subject matter related to any of the topics covered. Students are required to read and analyze articles considered fundamental to the current understanding of the topics covered.

**INFO 730 Seminar on Information Systems Development Methodology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 630 or equivalent. This doctoral seminar covers the philosophical and theoretical foundations of information systems development methodologies and their development. This seminar reviews the latest developments in this field, commonly known as method engineering. In addition to survey readings, students must accomplish the following: develop an understanding of the evolution of the conceptual structures upon which modern ISDM and CASE tools are based, and develop an ISDM to solve a specific class of problems, and its CASE environment. The primary tool for developing CASE environment is MetaEdit.

**INFO 740 Intelligent Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or equivalent. An in-depth analysis of the state of the art in decision support systems, expert systems, executive information systems, agent technology and other related topics. The objective of this course is to provide an intellectual foundation for students wishing to write a doctoral dissertation on a subject matter related to any of these topics. Students are required to read and analyze articles considered fundamental to the current understanding of the topics covered.

**INFO 750 Human-computer Interaction**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 652 or equivalent. Provides students pursuing the Ph.D. in information systems exposure to current basic and applied research in the field of HCI as it applies to the development, use and deployment of management information systems within an organizational environment. The objective of this course is to provide an intellectual foundation for students wishing to write a doctoral dissertation on a subject matter related to the any of the topics covered. Students are required to read and analyze articles considered fundamental to the current understanding of the above listed topics.

**INFO 760 Group Support Systems/CSCW**

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 654 or equivalent. Prepares doctoral students majoring or minoring in information systems to do empirical research on GSS and CSCW. Students are expected to master the literature published in the last two decades in the discipline. The objective of this course is to provide an intellectual foundation for students wishing to write a doctoral dissertation on a subject matter related to any of the topics covered. Students are required to read and analyze articles considered fundamental to the current understanding of the above listed topics.

**INFO 767 Information Systems Network Design**

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 467 or INFO 667. Introduction to the concepts of data communication network design. Wide area, local, and distributed networks are studied together with their interrelationship to business information systems. Case study orientation throughout.

**INFO 798-799 Thesis in Information Systems**

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

**INFO 898 Dissertation Research in Information Systems**

1-12 credits. Limited to Ph.D. in business candidates.

**Graduate courses in management (MGMT)****MGMT 500 Quantitative Foundation for Decision Making**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Basic course in algebra. Students without an adequate background in algebra should take MGMT 171. A review of basic algebra with emphasis on differential and integral calculus and their application in solving business problems. These topics also provide the necessary foundation for using and understanding more advanced quantitative procedures. May not be included in the 30 semester credits of advanced work required for any of the master's degrees offered by the School of Business.

**MGMT 524 Statistical Elements of Quantitative Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 500 or equivalent. Develops an ability to interpret and analyze business data in a managerial decision-making context. Managerial applications are stressed in a coverage of descriptive statistics, probability, sampling, estimation, hypothesis testing, and simple regression and correlation analysis. This is a foundation course.

**MGMT 540 Management Theory and Practice**

Semester course; 3 lecture hours. 3 credits. Theories, principles, and fundamentals applicable to contemporary management thought and productive activities. This is a foundation course.

**MGMT 632 Statistical Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. A business application-oriented coverage of statistical inference, analysis of variance, multiple regression and correlation, basic forecasting techniques, nonparametric tests, and other related procedures. Use of a computer statistical package will be included for most topics.

**MGMT 633 Issues in Labor Relations**

Semester course; 3 lecture hours. 3 credits. The conceptual framework of labor relations; the interconnection between labor-management relations and the sociopolitical environment.

**MGMT 634 Collective Bargaining and Labor Arbitration**

Semester course; 3 lecture hours. 3 credits. The negotiation and administration of collective bargaining contracts; the handling of grievances.

**MGMT 637 Advanced Human Resource Management**

Semester course; 3 lecture hours. 3 credits. A critical analysis of the functions and problem areas related to human resource management in a large organization; philosophy of human resource management; employee recruiting, testing, and wage and salary administration and supplemental compensation systems; manpower, training, and development; employee services; the legal environment of human resource management.

**MGMT 641 Organizational Leadership and Project Team Management**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Completion of all M.B.A. foundation courses or equivalent, or permission from the Graduate Studies in Business Office. This course is restricted to

M.B.A. students and must be taken concurrently with INFO 661. An advanced course in management, involving theories and models aimed at developing the managerial competencies needed to analyze, understand, predict and guide individual, group, and organizational behavior.

**MGMT 642 Business Policy**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Must be taken after completion of all foundation courses plus 15 credits of advanced courses. Integration of principles and policies of business management from the fields of accounting, economics, marketing, finance, statistics, and management in the solution of broad company problems and in the establishment of company policy. Emphasis on interaction of disciplines in efficient administration of a business. Course employs case analysis approach.

**MGMT 643 Applied Multivariate Methods**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 632 or equivalent. Study of multivariate statistical methods frequently used in business and administrative problems including principal components, factor analysis, discriminant analysis, MANOVA, and cluster analysis. The focus is on applying these techniques through the use of a computer package.

**MGMT 644 International Business Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Completion of foundation courses. Survey course for students interested in international and multinational management. Review of historical, governmental, monetary, and cultural issues affecting the transfer of resources and management knowledge across national boundaries; multinational business and management strategies; study of management practices in selected countries.

**MGMT 645 Operations Research**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. Business problems in production, inventory, finance, marketing, and transportation translated into mathematical models: strengths and weaknesses of such translations. Solution procedures and their limitations.

**MGMT 648 Managerial Decision Making**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. Formal analytical techniques used by organizations in reaching decisions. The concepts of both classical and Bayesian decision methods will be examined. The emphasis is on the application of a decision-theoretic approach to solving problems in contemporary organizations.

**MGMT 649 Compensation Policy and Administration**

Semester course; 3 lecture hours. 3 credits. Analysis of the concepts and processes involved in compensation systems. Includes evaluation of the internal and external dimensions of compensation, policy issues involved, concepts, and forms of compensation, administration of compensation systems, and current and future issues.

**MGMT 651 Organizational Communication**

Semester course; 3 lecture hours. 3 credits. Study of theoretical constructs of the communication process in organizations. Application of communication principles to managerial functions, training, telecommunications, and other organizational situations.

**MGMT 652 Advanced Business Communication**

Semester course; 3 lecture hours. 3 credits.  
Development of skill in planning and writing business reports and other shorter written communications, conducting business research, delivering oral presentation, and using business communication media.

**MGMT 655 Entrepreneurship**

Semester course; 3 lecture hours. 3 credits. Individual and corporate entrepreneurship in high and low technology enterprises. Develops an understanding of the role of entrepreneurship in management theories and practices. Students will develop comprehensive venture analysis plans for presentation.

**MGMT 669 Forecasting Methods for Business**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 524 or equivalent that includes simple regression. A presentation of forecasting methods and applications for managerial decision making in business and other organizations. Coverage includes selection of appropriate methods and issues involved in developing and implementing forecasting models. Techniques covered include smoothing, seasonal adjustment, time series (Box-Jenkins) and judgmental methods.

**MGMT 674 Cases in Operations Research**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: ACCT 608, MGMT 645, and completion of foundation courses or equivalent. Integrates and applies prior instruction in operations research. Provides experience in the use of operations research techniques for solving organizational problems through the analyses of cases and management simulations. Use of computer packages will be emphasized.

**MGMT 675 Operations Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MGMT 641 and INFO 661. This course is restricted to M.B.A. students and must be taken concurrently with INFO 664. A systematic investigation of the concepts and issues in designing, operating and controlling productive systems in both manufacturing and services.

**MGMT 677 Quality**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 524 or equivalent. Provides a foundation in current concepts of quality management and the tools/techniques used in a quality improvement process. Philosophies of quality management and statistical tools/techniques for continuous improvement are presented. Applications for manufacturing and service industries included.

**MGMT 680 Health, Safety and Security Administration**

Semester course; 3 lecture hours. 3 credits. Study of design and development of an effective safety or risk-control program. Topics include organizational needs and assessment, program evaluation, design/implementation of critical program components, training, accident cost-accounting, cost containment. Also addresses management strategies, communication techniques, motivation and incentive programs and other special topics.

**MGMT 682 Human Resource Staffing**

Semester course; 3 lecture hours. 3 credits. Addresses the activities and processes that affect the staffing function. Subjects include attracting, selecting, and

retaining people who will facilitate the accomplishment of organizational goals. Designed for the future human resource professional who will be involved with designing, administering, revising, and evaluating selection programs and procedures.

**MGMT 684 Issues in International Human Resource Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 637 or permission of instructor. Focuses on issues affecting the application of human resource management practices in an international environment. Examines current challenges in the selection, appraisal, development, compensation, and maintenance of expatriates, repatriates, host country nationals, and third-country nationals. Includes contextual factors of industrial relations systems, legal environment, demographics, and culture.

**MGMT 690 Research Seminar in Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the MGMT 798-799 program.

**MGMT 691 Topics in Management**

Semester course; 1-3 lecture hours. 1, 2, or 3 credits.  
Study of current topics. Topics may vary from semester to semester.

**MGMT 693 Field Project in Management**

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

**MGMT 697 Guided Study in Management**

Semester course; 3 lecture hours. 1, 2, or 3 credits.  
Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

**MGMT 701 Research Methods in Business**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Acceptance in the doctoral program. Study of the scientific method as currently applied in business and organizational research, with emphasis on philosophy, design, execution, and presentation of empirically based knowledge.

**MGMT 702/PSYC 702 Causal Analysis for Organizational Studies**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: Two graduate courses in statistics or permission of instructor. Focuses on conceptual and statistical issues involved with causal analysis with nonexperimental and experimental data. Course covers basic and advanced confirmatory factor analysis and structural equation techniques, with an emphasis on organizational and psychological applications.

**MGMT 743 Organizing Systems**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 524 or equivalent, or permission of instructor. Surveys the foundations of management

theory as well as more recent research and theory on the leadership through which work is organized and directed.

**MGMT 745 Advanced Operations Research**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 645 or equivalent. Advanced discussion of topics in mathematical programming and network analysis as applied to organizational decision making. Includes network flows, integer, nonlinear, and dynamic programming, and multicriteria optimization. Emphasis on applications and the use of the computer for problem solving.

**MGMT 746 Cognitive and Emotional Processes in Organizations**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 524 or equivalent. This course examines organizational life in terms of cognitive and emotional processes at the individual, group, and organizational level. Special attention will be given to how people perceive and evaluate each other.

**MGMT 749 History of Management Thought**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 540. Traces the history of management from its beginnings to current approaches and theories.

**MGMT 750 Motivational Theories and Applications**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 524 or equivalent. Critical examination of significant theoretical and applied research on motivational concepts in the organization context.

**MGMT 757 Corporate Strategy and Long-Range Planning**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MGMT 642 or equivalent. Analysis and evaluation of current methods and research in the areas of corporate strategy and long-range planning.

**MGMT 798-799 Thesis in Management**

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

**MGMT 898 Dissertation Research in Management**

1-12 credits. Limited to Ph.D. in business candidates.

**Graduate courses in marketing and business law (MRBL)**

**MRBL 530 Fundamentals of the Legal Environment of Business**

Semester course; 3 lecture hours. 3 credits. The legal environment of business is examined in view of common law principles, statutory provisions and administrative regulations affecting various forms of business organizations and management obligations to the company, its owner, and the public. Role of ethics and key commercial law areas are examined including Uniform Commercial Code Provisions.

**MRBL 570 Concepts and Issues in Marketing**

Semester course; 3 lecture hours. 3 credits. Designed for graduate students with little or no undergraduate education in marketing. A study of the philosophy, envi-



ronment, and practice of contemporary marketing. This is a foundation course.

**MRBL 631 Advanced Labor Law and Legislation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MRBL 323 or permission of instructor. Not open to students who have completed MRBL 427. Advanced labor law and legislation with pertinent causal factors; administrative and judicial determination to date.

**MRBL 646 Advanced Labor and Employment Relations Law**

Semester course; 3 lecture hours. 3 credits. This course examines the laws concerning human resources in organizations. Equal Employment Opportunity, wage and hours laws, Equal Pay Act, the Employee Retirement Income Security Act, the Occupational Safety and Health Act, and employee personal rights laws are emphasized.

**MRBL 651 Direct Marketing Theory and Research**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MRBL 570 or equivalent and permission of instructor or course administrator. Examines all processes in a direct marketing program. Introduces theories of buyer behavior as they relate to direct marketing practice. Examines marketing research concepts and techniques for research design and data collection used by direct marketing decision makers.

**MRBL 652 Database and Direct Marketing Strategy**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MRBL 570 or equivalent and permission of instructor or course administrator. Examines the process of building and implementing an effective marketing database. Introduces a framework for creative direct marketing strategy development and provides application exercises using both traditional media and the Internet.

**MRBL 653 Concepts and Issues in Direct Marketing Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MRBL 570 or equivalent and permission of instructor or course administrator. Focuses on specialized direct marketing issues, including legal, ethical, global and not-for-profit. Emphasizes problem solving for the leadership of a direct marketing operation using a "live" case study.

**MRBL 656 International Marketing**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MRBL 570 or equivalent. Orientation to the international market place. Formulation of international marketing strategies for firms participating in global trade. Emphasis on international environment, multinational economic blocs, international competi-

tion, and development of international marketing strategies.

**MRBL 657 International Market Planning Project**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MRBL 570 and permission of instructor. This course is a comprehensive real-life, field-based research and strategic planning exercise. A team of graduate business students is matched with a Virginia business that is interested in initiating or expanding export sales. Under the supervision of the instructor, the student team develops an international market plan for the client company. The team functions as an international business consultant to its assigned company.

**MRBL 659 Database Marketing**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MRBL 570. Provides a theoretical foundation for the study of database marketing, rooted in relationship marketing and improving marketing productivity. Examines the various roles that a database marketing system can play within any business, and offers a framework for determining the database requirements of any organization, including a review of existing database marketing software packages in the marketplace. Examines real-world examples of database marketing via case studies, client projects, and presentations by practitioners. Includes computer laboratory exercises for students to gain knowledge and experience of analyzing marketing databases for the purpose of determining customer profitability, response to marketing communications, profiling customer segments and improving marketing decision making overall.

**MRBL 671 Marketing Management**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MRBL 570 or equivalent. Detailed study of concepts and procedural alternatives in the delineation of the market target, the development and implementation of the marketing mix, and the control and analysis of the total marketing effort.

**MRBL 672 Concepts in Consumer Behavior**

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 570 or equivalent. A study of the pertinent psychological, sociological, and anthropological variables that influence consumer activity and motivation.

**MRBL 673 Marketing Research**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MGMT 524 and MRBL 570 or equivalents. A discussion of the techniques of marketing research. Special emphasis will be given to marketing problem definition, determination of information needs, and current methods of analysis of marketing data.

**MRBL 674 Service Quality Management**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Student in good standing in VCU master's program. This

course enables marketing students to develop a better understanding of service offerings from both a theoretical and practical perspective. Learning will focus on both private and public-sector service organizations. Students will learn how to analyze the design of service offerings, including operations, environment, and people, and make recommendations for improving the offerings. The importance of internal and external customer feedback and continually measuring customer satisfaction/dissatisfaction will be highlighted as an integral part of managing service quality.

**MRBL 690 Research Seminar in Marketing and Business Law**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the MRBL 798-799 program.

**MRBL 691 Topics in Marketing and Business Law**

Semester course; 1-3 lecture hours. 1, 2, or 3 credits.  
Study of current topics. Topics may vary from semester to semester.

**MRBL 693 Field Project in Marketing and Business Law**

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

**MRBL 697 Guided Study in Marketing and Business Law**

Semester course; 3 lecture hours. 1, 2, or 3 credits.  
Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

**MRBL 798-799 Thesis in Marketing and Business Law**

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.



# School of Dentistry

## Graduate Program

The School of Dentistry was created in 1893 when the University College of Medicine opened with a dental department as one of its original divisions. The Medical College of Virginia inaugurated a dental education program in 1897, and in 1913 the two schools were merged to form the MCV School of Dentistry.

In 1968, by an act of the Virginia General Assembly, MCV was merged with Richmond Professional Institute to form Virginia Commonwealth University. The School of Dentistry is located on the MCV Campus.

The facilities of the School of Dentistry are housed in the Wood Memorial and Lyons buildings and contain clinical facilities, research facilities, classrooms, student laboratories, departmental offices and a computer-learning laboratory.

The school provides opportunities for selected, qualified individuals to study dentistry under the most favorable conditions and in accordance with the standards established by the Commission on Dental Accreditation of the American Dental Association.

The degree of doctor of dental surgery (D.D.S.) is awarded to graduates of the school's professional program and the bachelor of science degree to graduates of the Division of Dental Hygiene. Graduates of the advanced dental education programs in endodontics, orthodontics, pediatric dentistry, periodontics and prosthodontics are awarded the master of science degree.

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### Mission

The VCU School of Dentistry is a public, urban, research dental school, supported by Virginia to serve the people of the state and the nation. The school's mission is to provide educational programs that prepare graduates who are competent to provide dental care services; generate new knowledge through research and other scholarly activity; and provide quality oral health care to the public and service to the community.

### Master of science

The master's degree program is offered concurrently with the advanced dental education programs in endodontics, orthodontics, pediatric dentistry, periodontics and prosthodontics. Students completing these programs are awarded a specialty certificate and a master of science degree. The certificate and degree programs must be completed concurrently.

For more information on these advanced dental education programs see the School of Dentistry Professional Programs section of this bulletin.

### Requirements for admission

Students must first be accepted into one of the advanced dental education programs in endodontics, orthodontics, pediatric dentistry, periodontics or prosthodontics. Once accepted, students are automatically enrolled in the master's degree program in the School of Graduate Studies. A separate application and fee is required for admission to the School of Graduate Studies.

### Requirement for graduate degree

1. The student must complete all course work for the particular advanced dental education program.
2. The student must initiate, develop, and complete an original scientific study.

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D.D.S. 1973 University of Iowa  
M.S. 1982 University of Iowa

#### James H. Revere Jr.

Assistant Professor of Orthodontics and  
Executive Associate Dean (1968)  
B.A. 1961 University of Richmond  
D.D.S. 1965 Medical College of Virginia

#### Carolyn Booker

Assistant Dean for Students (1999)  
B.S. 1976 South Carolina State University  
M.A. 1977 South Carolina State University  
Ph.D. 1987 Southern Illinois University

#### Marshall P. Brownstein

Associate Professor of Pediatric Dentistry and  
Assistant Dean for Admissions and Student  
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B.S. 1963 University of Maryland  
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#### Betsy A. Hagan

Associate Professor of General Practice and  
Associate Dean for Clinics (1980)  
B.S. 1974 Virginia Polytechnic Institute and  
State University  
D.D.S. 1978 Medical College of Virginia of  
Virginia Commonwealth University  
M.B.A. 1984 Virginia Commonwealth University

#### James E. Hardigan

Associate Professor and Associate Dean for  
Administration (1975)  
B.S. 1968 Northeastern University  
M.B.A. 1970 Northeastern University  
Ph.D. 1975 Cornell University

#### David C. Sarrett

Professor of General Practice and Assistant  
Dean for Academic Affairs (1992)  
D.M.D. 1977 University of Florida  
M.S. 1988 University of Florida

#### Harvey A. Schenkein

Paul Tucker Goad Professor of Periodontics and  
Microbiology and Immunology and Assistant  
Dean for Research (1978)  
B.A. 1970 State University of New York  
D.D.S. 1974 State University of New York  
Ph.D. 1978 State University of New York

3. The student must complete a thesis according to the School of Graduate Studies' guidelines.
4. The student must pass the final examination of the thesis.
5. The student must maintain a cumulative GPA of 3.0.

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## Thesis adviser and committee

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Students receive guidance and counsel from the director of their program. The program director holds primary responsibility for monitoring the development of the student in the program and providing appropriate guidance and counsel essential to the scholarly development of the student.

A thesis advisory committee, appointed shortly after the student enrolls, serves as both an examining and consultative body, functioning to assist the student with development of their research.

Each student shall have a thesis adviser and advisory committee. In many cases, the program director will also serve as the thesis adviser.

The student's thesis adviser shall be appointed by the program director. The adviser must be a member of the graduate faculty. Appointment should be made by the beginning of the spring semester of the first year.

The adviser shall, with the student's advisory committee, have responsibility for guiding the student's research. The adviser will identify members of the faculty to comprise the advisory committee. The adviser will serve as the chair of the committee. The adviser will supervise the student's research work and thesis preparation and be one of the examiners of the thesis.

The student's advisory committee shall be appointed no later than the midpoint of the spring semester of the first year. Exceptions to this rule must be approved by the program director and thesis adviser. The committee shall consist of a minimum of three members as follows: the student's thesis adviser; two members from the graduate faculty, one of which must be from the department/program. Adjunct faculty can be appointed to the graduate faculty for the purpose of serving on an individual student's advisory committee.

The advisory committee functions as an advisory body to ensure that timely progress toward completion of the thesis is being achieved. It is the student's responsibility to stay in contact and meet regularly with the committee. The advisory committee serves as a scientific consultative body and conducts the final examination of the thesis work.

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## Courses in Dental Special Topics

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### DENS 502 Computer Applications in Dentistry

Semester course; 16 seminar hours. 1 credit. Provides the graduate student with information on how to use technology to locate, evaluate and collect information from a variety of scientific sources. In addition, students will learn how to use technology tools to process data and report results.

### DENS 550 Update in Practice Administration

Semester course; 15 seminar hours. 1 credit. Lectures and seminar discussion on the business aspects of contemporary specialty dental practice, with emphasis on entry into practice, associateship contracts, financing arrangements, risk management and employee relations.

### DENS 580 Biostatistics and Research Design in Dentistry

Semester course; 30 seminar hours. 2 credits. Provides the advanced education student in dentistry an appreciation for the need for and uses of fundamental biostatistical methods in dental applications. Appropriate research designs for answering research questions of importance in dentistry will be examined. An array of biostatistical methods that are commonly used in the dental literature and by agencies such as the FDA to evaluate new dental products and methodologies are discussed. Must be taken for two consecutive semesters.

### DENS 660 Interdisciplinary Care Conference

Semester course; 7 hours. Half credit. Provides a forum for formal presentation and group discussion of the diagnosis, treatment planning, delivery and prognosis of interdisciplinary dental care. Must be taken every semester of the program.

### DENS 700 Basic Sciences and Graduate Dentistry

First year; spring course; 45 hours. 3 credits. Advanced level survey of topic areas related to the principles and practices of dentistry including: oral pathology, biochemistry and physiology, infection and immunity, pharmacology, biomaterials and genetics.

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## Courses in Endodontics

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### ENDO 522 Introduction-Specialty of Endodontics

Semester course; 80 laboratory hours. 2.5 credits. Restricted to first-year students. Utilizes laboratory exercises to review basic concepts and introduce the more complex technical procedures required to practice the clinical specialty of endodontics.

### ENDO 530 Advanced Oral Pathology

Semester course; 13 seminar hours. 1 credit. Provides through a series of seminars, an in-depth knowledge of those specific areas of oral pathology that apply to endodontics.

### ENDO 532 Management of Medical Emergencies in the Dental Office

Semester course; 20 seminar hours. 1 credit. Provides through a series of seminars, an in-depth level of knowledge in the management of medical emergencies in the dental office.

### ENDO 560 Endodontic Therapy Lectures

Semester course; 36 lecture hours. 2 credits. Restricted to first-year students. Presents a series of lectures on clinical endodontic topics in order to familiarize the students with clinical endodontic procedures either in conjunction with or prior to the "Endodontic Topic Literature Reviews" on these specific clinical topics.

### ENDO 650 Endodontic Topic Literature Review

Semester course; 36 seminar hours. 2 credits. Reviews topic literature pertaining to the scientific basis for endodontic procedures and the materials and techniques utilized in the clinical practice of endodontics. Discusses content of the reviewed literature and critically evaluates by means of abstracts and study questions. Must be taken every semester of the program.

### ENDO 652 Endodontic Clinical Seminars

Semester course; 28 seminar hours. 2 credits. Requires students to present a seminar once each month in which difficult diagnostic cases, patient management problems and complex treatment cases are critiqued and treatment options discussed. Must be taken every semester of the program.

### ENDO 654 Endodontic Management of the Medically Compromised Patient

Semester course; 14 seminar hours. 1 credit. Provides students, through a seminar series, with an in-depth level of knowledge in the endodontic management of the medically compromised patient. Must be taken for two consecutive semesters.

### ENDO 656 Endodontic Current Literature Review

Semester course; 18 seminar hours. 1 credit. Provides a review of current journal literature that pertains to the scientific basis for endodontic procedures, materials and techniques currently being used in the clinical practice of endodontics. Discusses and critically evaluates the content of the reviewed literature. Requires written abstracts of all reviewed articles. Must be taken every semester of the program.

### ENDO 670 Master's Thesis-Endodontics

Semester course; 36 seminar hours. 2 credits. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis and prepares a manuscript for publication. Must be taken every semester of the program.

### ENDO 680 Clinical Endodontics

Semester course; 153 clinical sessions. 5 credits. Permits students to receive supervised training in every type of clinical endodontic procedure. Provides students with experience in the management and treatment of cases which are the same types of complex non-surgical and surgical cases treated in a specialty practice of endodontics. Must be taken every semester of the program.

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## Courses in Orthodontics

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### ORTH 516 Introduction to Orthodontics for Non-orthodontic Postdoctoral Students

Semester course; 30 lecture/seminar hours. 2 credits. Introduces the basis for orthodontic treatment for non-

orthodontic graduate students in dentistry. Discusses growth and development and the basis for orthodontic therapy.

**ORTH 532 Biomechanics: Theoretical Basis for Tooth Movement**

Semester course; 15 lecture/seminar hours. 1 credit. Introduces physical science of mechanics and engineering statics as applied to orthodontic force systems. Emphasizes equilibrium and the biological manifestation of force systems applied to the dentition and craniofacial skeleton.

**ORTH 620 Orthodontic Clinic for Non-orthodontic Graduate Students**

Semester course; 30 clinical sessions. 1 credit. Allows residents to diagnose and treat limited orthodontic problems with special emphasis on the primary and mixed dentitions. Includes, but is not limited to, anterior and posterior crossbites, space and tooth loss, transient or definitive crowding and tooth irregularities, oral habits, ectopic and other tooth eruption problems. Must be taken every semester of the program.

**ORTH 630 Orthodontic-Periodontic Conference**

Semester course; 7.5 seminar hours. Half credit. Discusses treatment planning and analysis of patients requiring combined orthodontic and periodontic care. Presents topics of interest to orthodontists and periodontists. Must be taken every semester of the program.

**ORTH 640 Orthodontic-AEGD Conference**

Semester course; 7.5 seminar hours. Half credit. Provides treatment planning and analysis of patients requiring combined orthodontic and restorative care. Encourages discussion of topics of interest to orthodontists and advanced general dentists. Must be taken every semester of the program.

**ORTH 650 Literature Review**

Semester course; 30 seminar hours. 2 credits. Reviews classical articles in areas of special orthodontic interest. Establishes the state-of-the-art and existing information base. Gives special attention to research methodology and conclusions reached. Must be taken every semester of the program.

**ORTH 652 Growth and Development**

Semester course; 30 lecture/seminar hours. 2 credits. Discusses the increases in size and complexity that occur in the craniofacial region including variations in proportionality and related variations in facial form and dental occlusion. Provides special emphasis on compensations in skeletal and soft tissue structures. Examines the basis for prediction of change. Must be taken every semester of the program.

**ORTH 654 Orthodontic Diagnosis and Treatment Planning**

Semester course; 30 seminar hours. 2 credits. Considers and discusses available and theoretical options for clinical management of variations in facial form and dental occlusion. Must be taken every semester of the program.

**ORTH 656 Current Literature**

Semester course; 30 seminar hours. 2 credits. Presents in a journal-club-format evaluation of current information in orthodontics and related disciplines. Includes special emphasis on research methodology and the contributions of current research to advances in orthodontics. Must be taken every semester of the program.

**ORTH 658 Analysis of Orthodontic Treatment**

Semester course; 22.5 seminar hours. 1.5 credits. Analyzes cephalometric and other objective measures of the outcomes of orthodontic therapy. Reviews treatment objectives with respect to actual changes effected in patients. Delineates changes resulting from therapy from normal variations in craniofacial development. Must be taken every semester of the program.

**ORTH 660 Orthognathic Conference**

Semester course; 15 seminar hours. 1 credit. Presents patients requiring coordinated orthodontic and oral surgery care. Emphasizes long- and short-term biologic stability of alterations in the structure and function of the craniofacial skeleton with increased emphasis on facial form and dental occlusion. Must be taken every semester of the program.

**ORTH 662 Craniofacial Anomalies**

Semester course; 15 lecture/seminar hours. 1 credit. Discusses the etiology and embryologic basis of congenital and acquired deformities in the craniofacial structures. Emphasizes syndromes with craniofacial manifestations and the diagnosis and treatment planning for patients with facial clefts. Must be taken every semester of the program.

**ORTH 664 Orthodontic Interactions with Generalists and Other Dental Specialties**

Semester course; 30 clinic/lecture/seminar hours. 2 credits. Provides supervised clinical experiences in treatment planning and treatment with general dental students and patients appropriate for general dental practices. Must be taken every semester of the program.

**ORTH 670 Master's Thesis-Orthodontics**

Semester course; 36 seminar hours. 2 credits. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis and prepares a manuscript for publication. Must be taken every semester of the program.

**ORTH 680 Orthodontic Clinic**

Semester course; 195 clinic sessions. 6.5 credits. Involves supervised experiences in treatment of a complete spectrum of normally occurring orthodontic problems in an environment simulating private practice. Must be taken every semester of the program.

## Courses in Pediatric Dentistry

**PEDD 510 Pediatric Advanced Life Support**

Semester course; 15 lecture/seminar hours. 1 credit. Increases the awareness of the risk factors that may lead to using life support measures in the infant, child and adolescent. Stresses early warning signs and what to do in a cardiopulmonary emergency. Requires students to know how to start an IV, perform endotracheal intubation, know essential and useful drugs, recognize ventricular fibrillation, defibrillation and dysrhythmias from the oscilloscope and paper recordings as well as drug therapy for dysrhythmias.

**PEDD 511 General Anesthesia Rotation**

Semester course; 40 clinical sessions. 1.5 credits. Teaches general anesthesia with special emphasis in

pediatrics. Allows students to become knowledgeable in pre-operative evaluation, risk assessment, assessing the effects of pharmacologic agents, venipuncture techniques, airway management, general anesthetic induction and intubation, administration of anesthetic agents, patient monitoring, prevention and management of anesthetic emergencies, recovery room management, postoperative appraisal and follow-up.

**PEDD 514 Introduction to Pediatric Dentistry**

Semester course; 30 lecture hours. 2 credits. Introduces material in pediatric dentistry. Involves didactic, clinical and laboratory portions.

**PEDD 572 Pediatric Dental Emergency Service**

Semester course; 30 clinical sessions. 1 credit. Graduate students are scheduled for emergency services on a weekly basis. Offers experience in the assessment and management of orofacial trauma, dental pain and infections. Must be taken for two consecutive semesters.

**PEDD 600 Oral Pathology Rotation**

Semester course; 20 clinical sessions. Half credit. Reviews approximately 250 slides of biopsy material daily for 10 days, which includes access to a consultation file containing approximately 1,500 cases. Encourages students to participate in numerous clinical consultations within the School of Dentistry and to learn how to do biopsies.

**PEDD 612 Seminar Series-Pediatric Dentistry and Medicine**

Semester course; 30 lecture/seminar hours. 2 credits. Provides an arena for students to present seminars in either a clinical area or medical conditions of interest to pediatric dentists. Gives students practical experience in giving formal presentations and provides him/her with information related to clinical subject area(s) with medical conditions about which pediatric dentists should be knowledgeable. Must be taken every semester of the program.

**PEDD 620 Pediatric Medicine Rotation**

Semester course; 40 clinical sessions. 1.5 credits. Requires students to obtain and evaluate medical histories, parental interviews, system-oriented physical examinations, clinical assessments of healthy and ill patients, selection of laboratory tests and evaluation of data, evaluation of physical, motor and sensory development, genetic implications of childhood diseases, the use of drug therapy in the management of diseases and parental management through discussions and explanations.

**PEDD 640 Clinical Teaching**

Semester course; 30 clinical sessions. 1 credit. Lectures and clinical instruction involving contact with third and fourth-year dental students. Provides teaching experience in diagnosis and treatment planning, restorative preparations and management of children's behavior. Must be taken every semester of the program.

**PEDD 650 Literature Review**

Semester course; 30 lecture/seminar hours. 2 credits. Reviews literature related to all aspects of the pediatric patient. Emphasizes the ability students to discuss the content of the articles and to critically evaluate it. Stresses the integration of new material with previously discussed literature and collateral material. Uses the reading list from the American Board of Pediatric Dentistry. Must be taken every semester of the program.

**PEDD 654 Treatment Planning Seminar**

Semester course; 30 lecture/seminar hours. 2 credits. Provides diagnosis and treatment planning of the child, adolescent and special patient. Follows up on records on completed cases, which also are presented and evaluated. Discusses the techniques employed and the justification of the treatment. Must be taken every semester of the program.

**PEDD 656 Current Literature Review**

Semester course; 6 lecture/seminar hours. Half credit. Discusses articles from recent publications relating to all aspects of pediatric dentistry. Requires students to review "Practical Reviews in Pediatric Dentistry," a continuing education program sponsored by the American Academy of Pediatric Dentistry. Includes a review of cassettes on current pediatric dentistry by students every other month. Must be taken every semester of the program.

**PEDD 670 Master's Thesis-Pediatric Dentistry**

Semester course; 36 seminar hours. 2 credits. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis and prepares a manuscript for publication. Must be taken every semester of the program.

**PEDD 680 Pediatric Dental Clinic**

Semester course; 120 clinical sessions. 4 credits. Provides for the clinical management of pediatric dental patients. Provides experiences in the treatment of infants, preschool children, adolescent and special patients. Stresses pharmacological and non-pharmacological techniques and behavior management. Must be taken every semester of the program.

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**Courses in Periodontics**

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**PERI 508 Physical Diagnosis**

Semester course; 30 lecture hours. 2 credits. Provides lectures and hands on experience in physical diagnosis, history taking, general physical examination and review of major organ systems.

**PERI 511 Anesthesiology Rotation**

Semester course; 45 clinical sessions. 1.5 credits. Provides students with experience in general anesthesia under the direction of the dental anesthesiologist. Emphasizes operating room procedures, airway management, intravenous technique, anesthetics and resuscitative procedures. Includes clinical management of conscious sedation cases.

**PERI 512 Conscious Sedation**

Semester course; 30 lecture/seminar hours. 2 credits. Reviews concepts of parental conscious sedation techniques to include anatomy and physiology of the respiratory, cardiovascular and central nervous system, drug pharmacology, intravenous technique, prevention, recognition and management of complications, management of emergencies, physiologic monitoring and equipment, basic life support and advanced cardiac life support.

**PERI 514 Introduction to Periodontics**

Semester course; 90 lecture/seminar hours. 3 credits. Provides students with an introduction to the clinical

practice of periodontics. Emphasizes diagnosis, etiology, prognosis, treatment planning, initial therapy, therapeutic approaches, suturing techniques, oral hygiene and dental photography.

**PERI 515 Internal Medicine Rotation**

Semester course; 45 clinic sessions. 1.5 credits. Provides students with experience in internal medicine under the direct supervision of the Department of Internal Medicine. Emphasizes hospital procedures and management of the medically-compromised patient.

**PERI 520 Principles of Periodontics**

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken for two consecutive semesters. Reviews the principles of the basic science of periodontology, including anatomy of the periodontium, classification, etiology, diagnosis, scaling and root planning, and treatment planning. Reviews the indications and contraindications for management of complex periodontal problems. Reviews the principles of non-surgical and surgical techniques.

**PERI 522 Implantology**

Semester course; 16 lecture/seminar hours. 1 credit. Covers the historical review of dental implants, including biologic principles, techniques and systems; diagnosis, interdisciplinary considerations, treatment planning and indications and contraindications for implants; wound healing for implants, including osseointegration, surgical techniques and implant maintenance. Provides a hands-on technique laboratory.

**PERI 619 Clinical Pathology Rotation**

Semester course; 21 clinic sessions. .5 credit. Provides instruction in patient assessment, biopsy technique, assessment of tissue preparations and review of oral histologic slide materials.

**PERI 630 Medicine-Oral Medicine Seminar**

Semester course; 26 seminar hours. 1 credit. Must be taken every semester of the program. Emphasizes diagnosis, pathogenesis, oral manifestations and management of systemic diseases. Reviews the management of the medically-compromised patient, including laboratory procedures, pharmacology, hematology and reviews of the cardiovascular, respiratory, endocrine and neurologic systems. Discusses and critically evaluates medical and oral medicine topics relative to management of the periodontal patient.

**PERI 650 Periodontal Literature Review**

Semester course; 48 seminar hours. 3 credits. Must be taken every semester of the program. Reviews the periodontal literature from early classic articles to current publications pertaining to the scientific basis for periodontal procedures. Reviews the concepts of diagnosis, etiology, epidemiology, pathogenesis, therapy, maintenance of periodontal diseases and implantology. Discusses content of the literature by means of abstracts and study questions.

**PERI 654 Treatment Plan – Case Presentations**

Semester course; 12 seminar hours. 1 credit. Must be taken every semester of the program. Emphasizes the interpretation the medical and dental histories, radiographic and clinical findings, diagnosis, etiology, prognosis, treatment planning, therapy and supportive periodontal care. Discusses the content of reviewed cases by written and oral presentations. Requires the student to assimilate and interpret clinical findings.

**PERI 656 Current Literature Review**

Semester course; 36 seminar hours. 2 credits. Must be taken every semester of the program. Provides an in-depth review of contemporary periodontal literature. Discusses content of the reviewed literature by means of abstracts and discussion.

**PERI 670 Master's Thesis-Periodontics**

Semester course; 25 seminar hours. 1.5 credits. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis and prepares a manuscript for publication. Must be taken every semester of the program.

**PERI 680 Clinical Periodontics**

Semester course; 160 clinic sessions. 5 credits. Must be taken every semester of the program. Provides supervised training in periodontics. Provides the student with the experience in the treatment and management of patients with various types and severities of periodontal diseases. Emphasizes diagnosis, treatment planning, prognosis, scaling and root planning, non-surgical and surgical techniques. Provides experience in the treatment of advanced periodontal cases and more complex surgical techniques including preprosthetic, orthodontic, periodontal plastic and mucogingival procedures, guided tissue regeneration, guided bone regeneration and implant surgical techniques.

**PERI 719 Specialty Practice Management**

Semester course; 22 seminar hours. .5 credit. Must be taken for two consecutive semesters. Provides the student with experience in office management. Requires visits to specialty offices to familiarize the student with contemporary modes of practice administration and patient management.

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**Courses in Prosthodontics**

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**PROS 560 Basic Prosthodontics**

Semester course; 50 lecture/seminar hours; 170 laboratory hours. 9 credits. Must be taken first year of the program. Provides students with an introductory review of the principles, philosophy and practices in the specialty of prosthodontics. Includes subject areas of fixed, removable and implant prosthodontics, dental materials, occlusion, etc. Consists of lecture, seminar and preclinical laboratory exercises. Presents dental laboratory procedures that are followed with students demonstrating the technical process to a proficiency level.

**PROS 580 Clinical Prosthodontics**

Semester course; 45 clinic sessions. 1.5 credits. Must be taken first year of the program. Prepares students to evaluate, plan and treat a wide range of patients requiring advanced prosthodontic care. Utilizes a variety of dental implant systems, articulation and treatment philosophies. Includes numerical guidelines that provide direction for the type of patient treatment experiences needed. Designs clinical patient treatment to prepare the advanced education student to move into specialty practice with the necessary knowledge and experience.

**PROS 650 Literature Review Seminar**

Semester course; 60 lecture/seminar hours. 4 credits. Must be taken every semester of the program. Provides a comprehensive overview of both classic and current literature related to prosthodontics. Enables the student to discuss the content and to critically evaluate assigned articles. Stresses the integration of new material with previously discussed literature and collateral material. Uses time to review, answer and reference from the literature, previous questions generated by the American Board of Prosthodontics written examination so as to familiarize and prepare students for the board certification process.

**PROS 653 Prosthodontic Seminar**

Semester course; 52 lecture/seminar hours. 3.5 credits. Must be taken every semester of the program. Provides basic and advanced prosthodontic instruction at the post-doctoral level. Emphasizes diagnosis, treatment planning and case presentations. Provides a forum for

discussion of the examination, diagnosis, treatment planning and treatment of patients in the Graduate Prosthodontic Clinic. Covers topics in broad areas of prosthodontics and the related basic sciences by means of weekly presentations by students, faculty and invited guests.

**PROS 670 Master's Thesis-Prosthodontics**

Semester course; 25 seminar hours. 1.5 credits. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis and prepares a manuscript for publication. Must be taken every semester of the program.

**PROS 680 Clinical Prosthodontics**

Semester course; 135 clinic sessions. 4.5 credits. Must be taken every semester of the program after first year, semester III. Prepares students to evaluate, plan and treat a wide range of patients requiring advanced prosthodontic care. Utilizes a variety of dental implant systems, articulation and treatment philosophies. Includes numerical guidelines that provide direction for the type of patient treatment experiences needed. Designs clinical patient treatment to prepare the graduate student to move into specialty practice with the necessary knowledge and experience.





# School of Education

## Graduate Programs

The School of Education was established officially in 1964 as a part of the Richmond Professional Institute. In 1968, by action of the state legislature, the School of Education became a part of the newly formed Virginia Commonwealth University. In November 1975, the school moved to its present location in Oliver Hall on the Academic Campus of VCU.

The central focus of the School of Education is on providing services to prospective and experienced professionals in education, including adult education and human resource development, health and movement sciences, leisure service management, sport leadership and therapeutic recreation. The School of Education has a commitment to preparing high-quality professionals for urban, suburban and rural areas.

### Accreditation

The School of Education is accredited by the Virginia Department of Education, the Southern Association of Schools and Colleges and the National Council for Accreditation of Teacher Education. The recreation, parks and tourism curriculum is accredited by the National Recreation and Park Association, American Association for Leisure and Recreation and the National Council on Accreditation. The school also holds membership in the American and Virginia Association of Colleges of Teacher Education and in the Holmes Partnership.

### Mission

The School of Education is committed to excellence in the initial preparation and continuing development of professionals for leadership, teaching, service and scholarly inquiry in culturally diverse settings across the life span. The school emphasizes early childhood through secondary education and lifelong learning; scholarship that extends knowledge and improves practice; and collaboration that connects the School of Education to the field of practice and supports schools and relevant educational and human service agencies.

The School of Education, as an integral part of a major urban research university, subscribes to and promotes the following values.

- The school as an example of the highest quality teaching and learning.
- The school as a diverse community of learners and scholars who, guided by democratic principles of participation, demonstrate a commitment to:
  - high professional standards and sustained faculty development,
  - a collaborative approach to teaching, scholarship and service both within and across disciplines,
  - inquiry that results in the scholarship of application, integration and teaching, as well as the scholarship of discovery, and
  - nurturing national and international relationships.
- The school as a leader providing quality education for students with individual and diverse needs. The school's graduates:
  - demonstrate a body of knowledge from a foundational core appropriate to their specialization(s), and
  - exhibit values and behaviors appropriate for effective professional practice in a democratic society.
- The school as a partner with public and school communities in addressing today's educational challenges.

**Note: The School of Education is undergoing a reorganization that includes switching from divisions to departments. Final approval will be obtained by the end of the fall 2003 semester. Beginning in December, please check the VCU Web site for the organizational changes.**

### Organization

The chief administrative office for the School of Education is the Office of the Dean. The school is organized for the management of instruction and degree programs into three divisions:

**Educational studies.** Programs in administration and supervision, adult education

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**William C. Bosher Jr.**  
 Dean  
 Ed.D. University of Virginia

**Michael D. Davis**  
 Senior Associate Dean  
 Ph.D. University of Illinois

**Diane J. Simon**  
 Associate Dean  
 Ph.D. New York University

**Beverly J. Warren**  
 Associate Dean  
 Ed.D. University of Alabama  
 Ph.D. Auburn University

**Gary W. Sarkozi, Ph.D.**  
 Director, School of Education Associates  
 Ph.D. Virginia Commonwealth University

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and human resource development, counselor education, and research and evaluation.

**Health, physical education and recreation.** Programs in health and movement sciences, leisure service management, therapeutic recreation and sport leadership.

**Teacher education.** Programs in early childhood/elementary, middle, secondary and special education; curriculum and instruction, including library/media and instructional technology; and reading.

The divisions are led by division heads with faculty assuming responsibility for curriculum and advisement by program cores. Each program core has a faculty member coordinator. See division sections in this bulletin for details regarding each division.

## Degree programs

The School of Education offers degree programs leading to the following:

### Master of teaching

early childhood/elementary education  
middle education  
secondary education

English  
foreign languages  
French  
German  
Spanish

history  
history and social studies  
mathematics  
sciences  
biology  
chemistry  
interdisciplinary science  
physics

special education

dual endorsement in emotional disturbance and mental retardation, emotional disturbance and learning disabilities, or learning disabilities and mental retardation

### Master of education

administration and supervision  
administration and supervision PK-12  
educational administration (optional track)  
adult education and human resource development  
counselor education

school counseling PK-12  
curriculum and instruction  
early education  
instructional technology  
library/media  
middle education  
secondary education

English  
foreign languages  
French  
German  
Spanish

mathematics  
sciences  
biology  
chemistry  
interdisciplinary science  
physics

reading

special education

early childhood special education  
emotional disturbance  
learning disabilities  
mental retardation  
severe disabilities

### Master of science

health and movement sciences  
recreation, parks and sport leadership

### Ph.D. in education

adult education and human resource development  
educational leadership  
instructional leadership  
research and evaluation  
special education and disability leadership  
urban services leadership

### Post-baccalaureate certificates

human resource development  
library/media specialist  
teaching

secondary education

English  
foreign languages  
French  
German  
Spanish

history/social studies  
mathematics

sciences  
biology  
chemistry  
interdisciplinary science  
physics

### Post-master's certificates

principal and supervisor  
reading specialist

## Extended Teacher Preparation Program

Any undergraduate student admitted to the university who declares a major in the College of Humanities and Sciences is also eligible to designate a specialization in early, middle, secondary or special education. Once the student has completed 90 credit hours, he or she applies to the School of Graduate Studies to begin graduate study in the School of Education. Upon successful completion of the program, the student receives a baccalaureate degree and a master of teaching degree. See the Division of Teacher Education section in this bulletin for program details.

## Licensure for education personnel

Licensure and endorsement are based in part on the successful completion of an approved program developed in response to

nationally recognized standards. All degree programs offered by the School of Education are approved by the Virginia Department of Education and the National Council for the Accreditation of Teacher Education. The commonwealth of Virginia is a member of the National Association of State Directors of Teacher Education and Certification (NASDTEC), which has a national reciprocity agreement for teacher licensure. Therefore, all graduate programs in the School of Education have approved program status and are a part of the NASDTEC Certification Reciprocity Agreement. Information about VCU students' performance on the state mandated licensure tests (PRAXIS I Reading, Writing and Mathematics, and PRAXIS II Specialty Area Tests) is available on the School of Education Web site: <http://www.soe.vcu.edu/ted/degree.html>.

## Graduate programs leading to initial teacher licensure

Individuals often decide to pursue a teaching career after they have completed a baccalaureate degree. VCU serves qualified individuals through approved programs leading to a master of teaching, master of education (special education) or a post-baccalaureate certificate in secondary teaching. Upon completion of a degree program, graduates are eligible for both Virginia licensure and/or endorsement in the specific degree area.

Students seeking initial licensure in Virginia must have earned a liberal arts degree (or its equivalent) and pursue professional studies focusing on a specific area of preparation or licensure. Those without initial licensure who enter a program should expect to take some additional course work prior to the awarding of a degree.

Individuals seeking initial licensure to teach must pass the Virginia Board of Education licensure examinations, currently PRAXIS. Admission to teacher preparation and clinical experiences requires that candidates meet or exceed the Virginia scores for PRAXIS I.

Those planning to teach at the secondary level must possess a major or its equivalent in the discipline in which they wish to teach and for which VCU offers the approved program teaching specialty.

Individuals who wish to obtain licensure in art education, music education, or theater education should consult the School of the Arts section of this bulletin.

The Master of Teaching Program integrates undergraduate course work for a bachelor's degree in a liberal arts or science major

with course work and graduate study leading to a master of teaching in a program area.

## Facilities

The School of Education is housed primarily in Oliver Hall, where classroom, laboratory and activity centers, and faculty and administrative offices can be found. The Division of Health, Physical Education and Recreation is located in the Franklin Street Gymnasium, which provides teaching facilities as well as faculty and administrative offices for the division.

## Support/resource offices

Various resource offices have been developed in the School of Education to provide support services for students, faculty and programs. These support units include the Office of Academic Services, the Office of Graduate Studies in Education, School of Education Associates Office, and the Instructional Technology Center, which includes two computer laboratories.

## Office of Academic Services

**Program and test information.** The Office of Academic Services provides basic information regarding the programs offered by the School of Education. Students may obtain various program forms in this office. Information regarding the PRAXIS series, Graduate Record Examination (GRE) and the Miller Analogies Test (MAT) also can be obtained here.

**Placements.** Placements for students in practica, internships and externships are coordinated through the Office of Academic Services. These placements are primarily in school systems and other educational facilities located in the city of Richmond and the counties of Chesterfield, Hanover and Henrico.

**Financial aid.** Information and applications for certain scholarships that are available to School of Education students can be obtained in the Office of Academic Services. All require that applicants be fully admitted to a graduate program in order to be eligible. Information on financial aid administered by the university can be found in the Graduate Studies at VCU chapter of this bulletin.

**Licensure and endorsement.** The Office of Academic Services serves as the center for information, materials and applications for

those students seeking licensure and/or endorsement for educational personnel in Virginia.

**Career files.** The Office of Academic Services maintains career-placement files for graduates with licensure. For further information on this service, contact the office at (804) 828-1927.

## Office of Graduate Studies in Education

**Admission, program and test information.** The Office of Graduate Studies in Education provides basic information regarding admission to programs offered in the School of Education and processes all applications for admission. Students may also obtain various administrative forms and information about the GRE and the MAT in this office.

**Financial aid.** The School of Education offers a small number of fellowships, assistantships and scholarships each academic year. The Office of Graduate Studies in Education coordinates School of Education awards including applications and the distribution of funds. Applicants must be fully admitted to graduate degree programs within the School of Education in order to be eligible.

In addition to School of Education awards, each division may have grant-funded, student worker positions available. For information on these opportunities, contact the appropriate division head. Information on financial aid administered by the university can be found in the Graduate Studies at VCU chapter of this bulletin.

**Ph.D. in Education Program.** The Office of Graduate Studies in Education is responsible for the administration of the Ph.D. in Education Program. Refer to the Ph.D. in Education section of this bulletin.

## School of Education Associates

The School of Education Associates Office is the contact for conducting School of Education off-campus related degree cohort programs, courses for credit and other professional development in-service workshops. Many off-campus partnerships and grant-funded projects also are coordinated and managed. The major emphasis is serving the community of K-through-12 administrators, teachers and staff in Central Virginia. Additionally, distance learning using various forms of technologies is being developed and offered by this office.

## Instructional Technology Center

The Instructional Technology Center (ITC) provides educational technology and media support to students, faculty and staff in the School of Education. Within the ITC are four components, each serving the school in unique ways.

The Computer Teaching Lab is a state-of-the-art computer facility where faculty help prospective teachers learn how to use computer technology in classrooms. The Open Computer Lab is available for student use approximately 14 hours each day.

The Infusio Lab enables students to participate in real-time distance learning activities. The fourth component, Computing Services, supports the EDUNET system and has the responsibility for maintaining all of the computers and related equipment in the School of Education.

## Centers and institutes

Programs, resources, and scholarly and service endeavors of the school are extended by a number of academies, centers, institutes and programs directed by the faculty. These centers and institutes include:

- Behavioral Intervention Program
- Career Connections Techlink
- Center for School-community Collaboration
- Central Virginia Leadership Academy
- Commonwealth Educational Policy Institute
- Institute for the Study and Development of Resilience
- Metropolitan Educational Research Consortium
- National Adult Education Professional Development Consortium
- Partnership for Persons with Disabilities
- Rehabilitation Research and Training Center
- Richmond Metro Professional Development Schools Partnership
- Special Education Training and Technical Assistance Center
- Virginia Adult Learning Resource Center

Other funded projects provide in-service training and personnel preparation training in the teaching of writing, special education and science projects.

## Admission procedures for graduate study

### Application procedures

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>. Note that applications cannot be processed

until they are complete (including test scores). Admission information specific to each program can be found in the division section of this bulletin.

## Test scores

Either the GRE, General Aptitude portion, or the MAT is required for the master of teaching, the master of education, the master of science, the post-master's certificate for principals and supervisors, and the post-baccalaureate certificate in teaching. The Ph.D. program requires the GRE, General Aptitude portion.

PRAXIS I, although not required for graduate admission, is required for placement in clinical experiences (practica, internships and certain externships) as well as for licensure in Virginia. Contact the Office of Academic Services for applications for Admission to Teacher Preparation, booklets on PRAXIS I and PRAXIS II, and information regarding offerings of the PRAXIS examinations by paper and pencil or by computer.

Information about the tests may be obtained in the Office of Academic Services and the Office of Graduate Studies in Education.

## Application deadlines

The following application deadlines have been established for the master of education, the master of science, the master of teaching and the post-baccalaureate certificate in teaching.

Mar 15 Summer session term of entry  
May 15 Fall semester term of entry  
Nov 15 Spring semester term of entry

The Ph.D. in education has the following application deadline:

Mar 15 Fall semester or summer session term of entry

Students who are unable to enroll for the semester for which they are accepted must request a deferment.

## General admission requirements

The admission decision will be made on an overall analysis of the following for each degree program. See each division section for any additional information.

## Master of teaching, master of education, master of science, post-master's certificate for principals and supervisors, post-baccalaureate certificate in human resource development and post-baccalaureate certificate in teaching

- A minimum GPA of 2.8 on a 4.0 scale on the last 60 semester hours of study. Applicants whose GPA during the last 60 semester hours of course work falls between 2.4 and 2.79 for the master of education and master of science, or 2.6 and 2.79 for the master of teaching and post-baccalaureate certificate in teaching on a 4.0 scale will be considered for provisional admission. See the Graduate Studies at VCU chapter of this bulletin for further information on provisional admission.
- Scores on the GRE or the MAT.
- An interview with the applicant may be required by the faculty of the core to which the applicant is seeking admission.

## Ph.D. in Education Program

Refer to the Ph.D. in Education Program section of this bulletin for admission requirements.

## Advising and student program planning

All students admitted to the School of Education are assigned advisers. Students are expected to work with their adviser to plan their programs of study. Each graduate program agreement or changes thereto must be approved by both the adviser and the appropriate division head, or the director of graduate studies for the Ph.D. in Education Program. Courses taken without approval are taken at the student's risk. Each student is required to complete and file a program plan with the division before the completion of the sixth credit hour.

## Steps to completing M.Ed. and M.S. degrees

Step	When	Where
1. Admission	0-6 hours	Office of Graduate Studies in Education
2. Program of studies	0-6 hours	With adviser, approved by division head

3. Candidacy	12-18 hours	Application approved by adviser, core coordinator, division head
4. Comprehensive examination*	30 hours	Application to division office
5. Externship or internship	Usually the last semester of course work	Application from Office of Academic Services
6. Graduation	Last semester of course work; see current bulletin for deadline	Application from registrar (approved by adviser, division head, dean's office and returned to registrar)

\* Not required in M.S. in Recreation.

The chart outlines the general steps to completing the master of education and the master of science degrees. Master of teaching, post-baccalaureate certificate in teaching, post-master's certificate for principals and supervisors, post-baccalaureate certificate in human resource development and Ph.D. in education students should refer to the appropriate section of this bulletin for information specific to these programs.

## Admission to candidacy

Admission to graduate study in the master of education or master of science programs does not constitute candidacy for a degree. Rather, students who have been admitted to graduate study are advanced to degree candidacy upon the recommendation of the adviser, core faculty and division in which the degree is sought.

Advancement to degree candidacy requires that students must have completed at least 12 but no more than 18 semester hours of graduate study with a minimum GPA of 3.0; must have demonstrated clearly the aptitude and ability to pursue graduate study, including independent study; must have exhibited a commitment to education as a profession; and must have demonstrated promise for a successful career in the field selected in terms of temperament and personality. Specific courses may be required prior to application for candidacy. Admission to degree candidacy is not an automatic process. Students must file an approved application for candidacy with their divisions. Only students who have been admitted to candidacy may pursue additional work toward the degree.

## Comprehensive examination

- Some students in a master of education or master of science in physical educa-

tion must take a three-hour written comprehensive examination.

- Written examinations will be given on the **first Saturday in November, the fourth Saturday in March, and the second Saturday in July**. Students must notify the department in writing of the intention to take the examination at least 30 days prior to the published date. All comprehensive examinations must be taken on dates indicated except for religious or health reasons. Any exceptions must be approved in advance by the division head.
- A minimum of three faculty members, designated by the core faculty, will evaluate each examination independently. Satisfactory performance on the comprehensive examination requires approval of two of the three evaluators.
- Any student failing the comprehensive examination must have a joint conference with at least two core faculty members, one of whom is the student's adviser, before taking the comprehensive examination again.
  - During the conference, the core faculty members may recommend additional academic preparation and/or competencies which must be met by the student prior to retaking the comprehensive examination.
  - The student will be notified by letter of the recommendations made by the core faculty in the conference.
- The student will have only two opportunities to take the comprehensive examination. Failure to pass the comprehensive examination the second time will result in the student being dropped from the degree program.

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## Transfer credit

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A maximum of six credit hours of acceptable graduate credit may be transferred into a graduate degree program. Course work taken prior to being admitted to a program in the School of Education and not applied to another degree may be applied for transfer. This includes course work taken at VCU.

Course work submitted for transfer is evaluated by the student's adviser and the division head. See the Ph.D. in Education Program section of this bulletin for further information regarding transfer credit for this program.

As a general rule, continuing education courses taken at institutions other than VCU will not be transferred.

Students seeking to earn credit at other institutions after acceptance to a graduate program in the School of Education must receive prior approval from their advisers and the division head, or the director of graduate studies for the Ph.D. program. See the Graduate Studies at VCU chapter of this bulletin for further information regarding transfer credit.

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## Awards

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The **Virginia Arnold Scholarship** is awarded annually to one or more outstanding students who demonstrate financial need and who are enrolled in either the early or middle education teacher preparation program. It is supported by an endowment created by Arnold, a former VCU faculty member.

The **William C. Boshier Jr. Scholarship** is awarded annually to an outstanding student in the Educational Administration Program. The scholarship is supported by the School of Education.

The **Pearl Burford Scholarship** was established by her former students at Richmond Professional Institute. It is awarded to students planning to become elementary teachers.

The **Jack A. Duncan Scholarship** is awarded annually to a student in the M.Ed. in Counselor Education Program who possesses promise as an effective school counselor for the future. Applicants must have a GPA of 3.0 or higher and be able to demonstrate personal and academic qualities predictive of success as a counselor. The scholarship honors Dr. Jack Duncan, Professor Emeritus of Counselor Education.

**Patricia H. Duncan Scholarship**, established by friends and colleagues of Duncan, was endowed in 2000. This scholarship, in the endowed amount of \$500, is awarded to graduate students who have an interest in language arts education.

The **Fleming Scholarship** was established to honor Drs. Gladys and Robert Fleming, long-time professors in the School of Education, who exemplified the value of the arts and humanities in their teaching. The award is given annually to a graduate student in administration and supervision, adult education, or counselor education. The successful applicant must demonstrate a commitment to humanities education and must be registered for six or more credit hours.

The **Arnold P. Fleshood Scholarship** is awarded annually to a graduate student in the School of Education in reading/language education or a related field with an interest in reading/language arts.

The **Howard G. Garner Scholarship for Developmental Disabilities and Interdisciplinary Studies** was established in honor of Dr. Howard G. Garner — a former faculty member and the first director of the Virginia Institute for Developmental Disabilities (VIDD) — by friends and family of Garner. This \$500 endowed award provides financial assistance for a trainee at the graduate or advanced level of education to pursue/continue interdisciplinary study in the field of developmental disabilities.

The **N. Thelma Jones Scholarship** is awarded annually to an outstanding fifth-year student in the Master of Teaching program (secondary education). The scholarship is supported by an endowment honoring this former teacher by her brother.

The **Ann Elizabeth Marston Scholarship** is awarded annually to a student planning a career in elementary or secondary education and who demonstrates both leadership qualities and a need for financial assistance. The award is supported by an endowment established by Dr. and Mrs. Robert A. Wilson in memory of his aunt who helped finance his education.

The **S. Virginia and Berta M. Newell Endowed Scholarship** is awarded annually to an outstanding student in a teacher preparation program in either early or middle education, who demonstrates financial need. It is supported by an endowment from their brother honoring his sisters who graduated from Richmond Professional Institute.

Sponsored by the VCU Chapter of Phi Delta Kappa, the **Phi Delta Kappa Scholarship Grant for Prospective Educators (VCU Chapter)** is awarded to an excellent education student who is interested in teaching or professional education as a career. The primary criteria used to select the recipient of this \$1,000 endowed award will include scholarship, recommendations, written expression, interest in teaching or professional education as a career, and school and community activities.

Applicants to the **School of Education Alumni Board Scholarship** must be enrolled in an undergraduate or graduate program in the School of Education. This scholarship varies in amount and will be awarded on both potential academic contributions to the field of education and on financial need.

Applicants to the **School of Education Faculty Organization Scholarship** must be enrolled in an undergraduate or graduate program in the School of Education, plan to enroll in a minimum of six hours per semester during the year of the award, and demonstrate potential to be competent professionals in their intended field. The applicants also must demonstrate financial need.

The **Schumacher Fund for Dissertation Research** was established by Dr. Sally A. Schumacher, the first full-time faculty member in educational research and evaluation, in memory of her parents, Professor F. X. Schumacher and Mrs. M. M. Schumacher. It will provide financial assistance to doctoral students in the School of Education who are undertaking dissertations.

The **Division of Teacher Education Scholarship** was established by faculty for an academically talented major pursuing a teaching career working with children and youth who come from traditionally underserved populations or who demonstrates a commitment to teaching students who present special challenges.

The **Gaynelle Whitlock Scholarship** honors Dr. Gaynelle Whitlock, a former associate dean of the school. It will provide financial assistance for graduate students in the counselor education program. Preference is given to individuals preparing to become elementary school counselors in the commonwealth of Virginia.

The **Willie W. Whitlock Merit Scholarship** was established by Mr. Willie W. Whitlock Esq. (B.S. 1950) as a merit scholarship in education to honor his sister, Dr. Gaynelle Whitlock, a faculty member and former associate dean in VCU's School of Education.

The **MERC Research Fellowship Awards** are designed to prepare individuals for leadership and research positions at the school, division, state and federal levels and/or teaching, research and consulting positions in higher education. MERC Fellows are sponsored by VCU. They support the work of the Metropolitan Educational Research Consortium (MERC), which is composed of VCU and Virginia State University and regional metropolitan school divisions.

For further information, see the School of Education Scholarship and Other Financial Aid Information brochure.

## **Division of Educational Studies**

- Bailey, James W., Professor Emeritus  
M.Ed. University of Chicago  
Human development and learning.
- Beale, Andrew V., Professor  
Ed.D. University of Virginia  
Counseling, career development, and parent education.
- Bosher Jr., William C., Distinguished Professor of Education and Public Policy and Dean  
Ed.D. University of Virginia  
Administration.
- Bost, William A., Professor Emeritus  
Ed.D. George Peabody College  
Managerial communications, educational improvement strategies.
- Cauley, Kathleen M., Associate Professor  
Ph.D. University of Delaware  
Cognitive development, educational psychology.
- Craver, Samuel M., Professor  
Ph.D. University of North Carolina  
History and philosophy of education.
- Dilworth, Robert L., Associate Professor  
Ed.D., Teachers College Columbia University  
Adult education
- Duncan, Jack A., Professor Emeritus  
Ed.D. University of Georgia  
Group procedures, communications.
- Ely, Vivien K., Professor Emerita  
Ed.D. North Carolina State University  
Curriculum and instruction in occupational education.
- Gerber, Paul J., Professor  
Ph.D. University of Michigan  
Special education, learning disabilities, effective teaching.
- Keese Jr., C. Gordon, Professor Emeritus  
Ed.D. University of Virginia  
Counselor education, educational measurement.
- Lambie, Rosemary A., Professor and Interim Division Head  
Ed.D. University of Kansas Medical Center  
Special education-emotional disturbance, educational administration.
- Leone, Susan D., Associate Professor  
Ed.D. University of Virginia  
Counseling, ethics and professionalism, group work.
- Linder, Fredric I., Assistant Professor  
Ph.D. State University of New York at Buffalo  
Human development and learning, educational psychology.
- Londoner, Carol A., Professor Emeritus  
Ph.D., University of Indiana  
Adult learning, human resource development, program development.
- McDavis Jr., Roderick J., Provost and Vice President for Academic Affairs  
Ph.D. 1974 University of Toledo
- McMillan, James H., Professor  
Ph.D. Northwestern University  
Research methods, educational psychology.

- Ozman, Howard A., Professor Emeritus  
Ed.D. Columbia University  
Philosophy of education, educational futures.
- Philipsen, Maïke, Associate Professor  
Ph.D. University of North Carolina  
Foundations of education.
- Sandkam, Sherry T., Assistant Professor and Associate Dean, School of Graduate Studies  
Ph.D. Virginia Commonwealth University  
Urban services.
- Schumacher, Sally A., Associate Professor Emerita  
Ph.D. Washington University  
Educational and evaluation research methods and design, curriculum, and program evaluation.
- Seyfarth, John T., Professor Emeritus  
Ed.D. University of Tennessee  
Developmental aspects of teachers' beliefs about their work, personnel management in schools.
- Sharman, Charles C., Associate Professor Emeritus  
Ed.D. University of Virginia  
Public school finance, public school administration.
- Sherron, Ronald H., Professor Emeritus  
Ph.D. University of North Carolina  
Adult learning, program evaluation, program planning, human resource development.
- Strandberg, Warren D., Professor Emeritus  
Ph.D. Northwestern University  
Philosophy and social foundations of education.
- Vacca, Richard S., Professor Emeritus  
Ed.D. Duke University  
Educational law.
- Wergin, Jon F., Professor Emeritus  
Ph.D. University of Nebraska  
Adult and higher education, educational psychology, educational research and evaluation.
- Whitlock, A. Gaynelle, Associate Professor Emerita  
Ed.D. University of Virginia  
Counselor education.

The Division of Educational Studies houses three degree-granting programs: 1) The M.Ed. in Adult Education and Human Resource Development, 2) the M.Ed. in Counselor Education and 3) the M.Ed. in Educational Administration and Supervision. In addition, the division hosts the post-master's certificate for principals and supervisors, and degree tracks in Educational Leadership and Adult Education and Human Resource Development in the Ph.D. in Education Program. The division also provides foundational courses in philosophy, sociology, history of education, educational psychology and research methods to degree-granting programs in the School of Education and across the university.

In addition to these education programs, the division manages the Center for School-community Collaboration, Central Virginia Leadership Academy, Commonwealth Educational Policy Institute, Institute for the Study and Development of Resilience, Metropolitan Educational Research

Consortium, National Adult Education Professional Development Consortium and the Virginia Adult Learning Resource Center. Division faculty are involved in a wide range of research and public service activities through these program centers.

## Division mission and values

The division's mission is: (1) to prepare individuals who possess the knowledge and skill to function effectively in educationally-related leadership roles in public and private settings, (2) to provide high quality instruction in the foundations of education for students in programs in the School of Education and other units of the university, and (3) to improve leadership practice in schools and other agencies through involvement of the faculty in service and scholarly activities, including partnerships.

The faculty of the division are committed to providing students with high quality instruction and supportive professional relationships and continuously improving the quality of their teaching and advising. They value collaborative efforts with personnel in the division, the school and the university, and in other institutions of higher education as well as with practitioners and lay persons in other settings. The faculty strive to maintain in the division an atmosphere marked by respect for individual differences among colleagues and students and support for their aspirations and work. The faculty are dedicated to engaging in service and scholarship activities that contribute to increasing individuals' and the division's national and international standing.

## M.Ed. in Administration and Supervision Program

The M.Ed. program and the post-master's certificate for principals and supervisors are designed to prepare individuals as instructional leaders in schools. The curriculum emphasizes instructional leadership, the policy context of administration, and operational management of schools. The program is accredited by the National Association of Colleges of Teacher Education and was awarded approved program status by the Virginia Department of Education.

**M.Ed. programs.** Students have two options in receiving the master of education in administration and supervision:

- educational administration and supervision PK-12
- educational administration (optional track)

Students already holding a master's degree who desire only certification as a principal or supervisor of instruction should apply to the Post-master's Certificate for Principals and Supervisors. A description of this program follows.

## M.Ed. in Administration and Supervision PK-12

The M.Ed. in Administration and Supervision PK-12 is a 39-hour program designed for individuals who aspire to positions as instructional leaders in schools. Applicants are expected to have had at least two years successful teaching experience. Students who wish to be endorsed as a school principal also will need to complete an assessment program.

<b>Core cluster</b>	credits
ADMS 600 Public School Administration	18
ADMS 605 Organizational Theory, Structure and Culture in Educational Settings	
ADMS 606 Organizational Behavior and Change in Educational Settings	
ADMS 611 School Law	
EDUS 660 Research Methods in Education	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	

<b>Specialization clusters</b>	21
ADMS 601 Processes of Instructional Leadership	
ADMS 604 Principalship Seminar	
ADMS 620 Improving School Programs and Performance	
ADMS 621 Management of School Operations and Support Programs	
ADMS 641 School Personnel Administration	
TEDU 615 Curriculum Development	
EDUS 609 Learning Theories in Education	
EDUS 672 Internship	
Students take ADMS 604, 621, 641 and EDUS 672 plus three of the other four courses.	

<b>Certification</b>	
Principals Certification Assessment Program or School Leaders Licensure Assessment	39

## M.Ed. in Administration and Supervision – Educational administration (optional track)

The M.Ed. in Administration and Supervision (Optional track) is a 36-hour program designed for individuals who aspire to leadership or policy positions in educational settings other than schools. This program will not lead to certification as a school principal or supervisor.

All students take nine hours of foundations course work and 12 credits in the core cluster. In addition, with the approval of

their advisers, all students develop a specialization consisting of 15 credit hours in an area of interest (higher education administrator, special education administrator, vocational administrator, personnel administrator or business/finance administrator).

<b>Foundations</b>	credits
EDUS 604 Adult Development	9
EDUS 660 Research Methods in Education	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	
<b>Core clusters</b>	12
ADMS 600 Public School Administration	
ADMS 605 Organizational Theory, Structure and Culture in Educational Settings	
ADMS 606 Organizational Behavior and Change in Educational Settings	
ADMS 611 School Law	
<b>Selectives</b>	15
Select five courses with approval of adviser	
EDUS 672 Internship is recommended but not required	
	36

## Certification programs

The Division of Educational Studies offers the Post-master's Certificate for individuals who aspire to become school principals or supervisors of instruction. Applicants must have completed a master's degree at an accredited university. Upon satisfactory completion of an approved plan of study, the individual will be recommended to the Virginia Department of Education for certification in administration and supervision.

## Post-master's Certificate for Principals and Supervisors

Individuals who have completed an M.Ed. in education or equivalent may qualify for endorsement as a school principal or supervisor by completing the Post-master's Certificate for Principals and Supervisors. Applicants must have had two or more years teaching experience and must have earned a master's degree in education. All requirements for admission to the graduate school apply to applicants for the post-master's certificate.

Students are required to complete a minimum of 21 hours beyond the master's, including 18 credits in required courses and three credits in selective courses. Equivalent courses taken within the last five years may transfer; advisers tailor the selective courses based upon students' experiences and goals.

<b>Required courses</b>	credits 18
ADMS 600 Public School Administration	
ADMS 601 Processes of Instructional Leadership	
ADMS 604 Principalship Seminar	
ADMS 605 Organizational Theory, Structure and Culture in Educational Settings	
ADMS 611 School Law	
EDUS 672/700 Internship/Externship	

<b>Restricted selective</b> (with approval of adviser)	3
ADMS 606 Organizational Behavior and Change in Educational Settings	
ADMS 620 Improving School Programs and Performance	
ADMS 621 Management of School Operations and Support Programs	
ADMS 641 School Personnel Administration	

Total 21

<b>Electives/specialization cluster</b>	15
A variety of options are available, including a specific mix of courses desired by the student. Some of the specialization cluster options are:	
• Human Resource Development	
• General Adult Education	
• Health Education Services	
• Higher Education	
• Information Systems	
• Correctional Education	
• Educational Counseling	
• Staff Development	
• Administrative and Public Systems	
• Educational Research and Organizational Evaluation	
• Adult Literacy	

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## M.Ed. in Adult Education and Human Resource Development Program

The master's degree in Adult Education and Human Resource Development is a 39-credit program of study that prepares individuals for a broad range of positions related to the development of adults. Graduates are found in major corporations, state and federal agencies, nonprofit organizations, community colleges and universities. Admission to the program is predicated on the "whole person" concept, taking into account life experience, academic record, references and the reasons for the student's interest in the program.

The program consists of three clusters. Over one-third of the courses taken are at the student's election and customized to student interest (electives/specialization). The elective courses can be taken in any school at the university. The option of an externship also is available, allowing the student to gain first-hand work experience in collaboration with a private business or governmental organization.

<b>Foundations cluster</b>	credits 9
EDUS 660 Research Methods in Education	
EDUS 604 Adult Development	
EDUS 673 Seminar on Educational Issues, Ethics and Policy or several other course offerings related to educational philosophy	

<b>Core program cluster</b>	15
ADLT 601 The Adult Learner	
ADLT 602 Adult Program Planning, Management and Evaluation	
ADLT 603 Learning Strategies for Adults	
ADLT 604 Adult Education Seminar	
ADLT 605 Learning Technologies for Adults	

## Post-baccalaureate Certificate in Human Resource Development

An 18-credit hour program is offered in human resource development for those wishing to pursue career interests in this field. Students may elect to earn the M.Ed. after completing the certification program, pursue it concurrently, or complete the certificate before taking other courses in the M.Ed. program. Students must have a minimum of four "A's" in the certification program and no grade lower than "B" in the remainder, to gain certification. A certificate and a customized letter citing student capabilities are issued upon program completion. The six required courses are:

- ADLT 605 Learning Technologies for Adults
- ADLT 620 Human Resource Development Overview
- ADLT 621 Skills Development for Human Resource Development
- ADLT 622 Human Resource Development Strategies and Interventions
- ADLT 704 Groups, Teams and Organizational Learning
- ADLT 705 Global Human Resource Development

## M.Ed. in Counselor Education PK - 12

The M.Ed. in Counselor Education Program is designed primarily to prepare counselors for elementary, middle and high schools in the commonwealth of Virginia and the nation, and secondarily to prepare counselors for higher education and community agencies. The program leads to school counseling licensure and preparation for advanced graduate work at the post-master's level. While licensure as a teacher and teaching experience may be required for employment as a school counselor, applicants for the M.Ed. in Counselor Education Program do not have to meet such criteria.

The faculty make every effort to assist students in individualizing a graduate program to their professional needs and interests. However, the mature student will recognize that individualization takes place in an environment of legitimate constraints revolving around institutional and license requirements. Faculty view each program as more than simply an aggregate of courses, and students should plan all program work with their faculty advisers.

A joint program with the School of Social Work provides a dual certification for both counselor and visiting teacher. Also available through the School of Social Work is a cooperative certification program in school social work.

For students who already have a master's degree in education, the 30 credits of program core courses in guidance and counseling will lead also to recommendation for licensure as a school counselor. Students wishing this licensure must meet with the core coordinator and file a plan of study. Although students holding master's degrees do not apply for admission to the graduate program, they must file the appropriate plan of study in order to qualify for the VCU approved program of study. No course work taken more than seven years prior to applying for licensure as a school counselor will count toward meeting VCU's approved program course equivalents.

## Guidance and counseling

<b>Foundations</b>	credits 9
Human development and learning	
EDUS 605 Child and Adolescent Growth and Development	
Cultural, historical and philosophical (one of the following)	
EDUS 601 Philosophy of Education	
EDUS 608 History of Western Education	
EDUS 610 Social Foundations of Education	
EDUS 612 Education and the World's Future	
EDUS 614 Contemporary Educational Thought	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	
Research	
EDUS 660 Research Methods in Education	

<b>Program core</b>	30
CLED 600 Introduction to Guidance	
CLED 601 Theories of Counseling	
CLED 602 Practicum: Techniques of Counseling	
CLED 603 Group Procedures in Counseling	
CLED 604 Practicum: Group Procedures in Counseling	
CLED 605 Career Information and Exploration	
CLED 606 Assessment Techniques for Counselors	
CLED 610 Guidance in Elementary and Middle Schools	
CLED 621 Secondary School Guidance Seminar	



EDUS 700 Externship (six credits)  
300 clock hours of actual work in an appropriate setting. Students wanting placement in elementary, middle or high schools may not fulfill this requirement during the summer.

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## Division of Health, Physical Education and Recreation

- Davis, Robert G., Professor  
Ph.D. University of Maryland  
Elementary physical education.
- Dintiman, George B., Professor Emeritus  
Ed.D. Columbia University  
Research methods, health education.
- Gayle, Richard, Associate Professor  
Ed.D. University of Tennessee  
Exercise physiology.
- Groves, Barney R., Professor Emeritus  
Ph.D. Florida State University  
Applied fitness, activity and older adults.
- Hartsoe, Charles, Professor Emeritus  
Ph.D. University of Illinois
- Mills, Allan S., Associate Professor  
Ph.D. University of Minnesota  
Travel and tourism, outdoor recreation, leisure behavior.
- Pratt, LeEtta, Associate Professor Emerita  
Ed.D. Oregon State University  
Health education.
- Ready, Keith F., Associate Professor  
Ph.D. Michigan State University  
Leisure behavior, park planning and outdoor recreation.
- Richardson, Joann, Assistant Professor  
Ph.D. Medical College of Virginia, Virginia Commonwealth University  
Health education.
- Ross, Scott E., Assistant Professor  
Ph.D. University of North Carolina  
Athletic training.
- Schiltz, Jack H., Professor  
Ed.D. Columbia University  
Motor learning, aquatics.
- Warren, Beverly J., Professor and Associate Dean  
Ph.D. Auburn University  
Exercise physiology, childhood obesity.
- Wise, Michael S., Associate Professor  
Ed.D. University of Georgia  
Management of leisure delivery systems and administration.

## M.S. programs

The master of science degrees in health and movement sciences and recreation, parks and sport leadership are designed to provide advanced educational preparation for individuals interested in pursuing careers in health and exercise science, school health and physical education and diverse sport and recre-

ational settings. All programs focus on the exploration of theoretical foundations and the development and application of specialized professional knowledge, skills and abilities.

Both degree programs require a minimum of 36 graduate credits and a required research application. These research options are delineated under each program.

After completing at least 12 graduate credits and not more than 18 credits, with a minimum GPA of 3.0, all students must apply for advancement to candidacy. Students in the health and movement sciences program must take a comprehensive examination during the semester in which they complete the 30th hour of course work.

## M.S. in Health and Movement Sciences

This program provides advanced course work for students interested in the application of health and movement science principles to exercise science, teaching and sports medicine. Applicants planning to enter the teaching profession should hold a valid teaching endorsement. This program does not provide opportunities for initial licensure in health and physical education.

The Health and Movement Sciences program of study offers a thesis and non-thesis option. Both options require a minimum of 36 total graduate credit hours for completion of the degree program. In the thesis option, students must complete HEMS 798 for six credit hours and 30 hours of prescribed course work. Students enrolling in this option will not be required to complete a comprehensive examination. In the non-thesis option, students must complete 36 hours of prescribed course work and must pass a comprehensive examination taken after the completion of the 30th hour of course work.

### Health and Movement Sciences

	credits
<b>Research core</b>	15
HEMS 600 Introduction to Research Design in HEMS and RPSL (3)	
HEMS 601 Movement Physiology (3)	
HEMS 602 Statistical Application in HEMS and RPSL (3) or BIOS 543 Statistical Methods I (3)	
HEMS 604 Nutrition for Health and Physical Activity (3)	
HEMS 605 Psychology of Physical Activity (3)	

<b>Thesis option</b>	6
HEMS 798 Thesis (6)	

<b>Specialty</b>	9-15
(select course work with consultation of adviser)	

- HEMS 500 Motor Development of Young Children (3)
- HEMS 505 Contemporary Issues in Health (3)
- HEMS 521 Pathomechanics of Sports Injuries (3)
- HEMS 550 Exercise, Nutrition and Weight Management (3)
- HEMS 606 Psychosocial Aspects of Sport (3)
- HEMS 610 Laboratory Techniques in Movement Science (3)
- HEMS 611 Biomechanics of Human Motion (3)
- HEMS 613 General Motor Ability Evaluation (3)
- HEMS 614 Motor Assessment for Special Populations (3)
- HEMS 615 Orthopaedics and Therapeutics in Sports Medicine (3)
- HEMS 620 Motor Learning and Performance (3)
- HEMS 660 Neuromuscular Performance (3)
- HEMS 700 Externship (1-6)
- HEMS 701 Clinical Exercise Physiology (3)
- HEMS 741 Directed Research Study (3)
- HEMS 751 Research Seminar in HEMS (1-3)

<b>Suggested outside electives</b>	6
(develop electives in consultation with adviser)	

<b>Total minimum required credits</b>	36
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## M.S. in Recreation, Parks and Sport Leadership

Students may select one of three specialty areas: leisure service management, therapeutic recreation or sport leadership. Entry into the Sport Leadership specialty area requires admission to the VCU SportsCenter Program. For more information and to request a VCU SportsCenter application, contact the VCU SportsCenter at (804) 828-TEAM or visit the Web: <http://www.vcu.edu/sportscenter>.

Leisure service management is for students who want to expand their professional preparation for general administration and leadership in public or private leisure service organizations. Therapeutic recreation is for students seeking advanced study to prepare for careers in leadership and supervision of recreation programs for disabled persons in clinical, residential or community settings. In these programs of study, specialty courses and electives focus on either leisure service management or therapeutic recreation.

### Program of study: Leisure Service Management or Therapeutic Recreation

	credits
<b>Research core</b>	9
HEMS/RPSL 600 Research Methods in Health, Movement Sciences and Recreation (3)	
HEMS/RPSL 602 Statistical Applications in Health, Movement Sciences and Recreation (3)	
Choose one:	
RPSL 797 Project Research (3)	

RPSL Thesis (3)	
Elective approved by adviser (3)	
<b>Program core</b>	6
RPSL 601 Conceptual Foundations of Leisure (3)	
Choose one:	
RPSL 606 Directed Readings (3)	
RPSL 607 Field Instruction (3)	
<b>Specialty</b> (choose one of the specialty areas)	6
Leisure Service Management	
RPSL 610 Organization and Administration of Recreation and Parks Systems (3)	
RPSL 609 Program Development and Management (3)	
Therapeutic Recreation	
RPSL 506 Contemporary Issues in Therapeutic Recreation (3)	
RPSL 605 Program Development in Therapeutic Recreation (3)	
<b>Electives</b>	15
(course work in related disciplines is selected with the consent of the student's adviser)	
Total required	36

## Sport Leadership

The VCU SportsCenter offers structured graduate programs combining classroom theory with exposure to relevant field experiences. Through the Sport Leadership program, students will be prepared to assume the responsibilities for developing professional and amateur athletes, and managing sports programs in a variety of academic, public and private sectors. The interdisciplinary faculty and curriculum give students the opportunity to concentrate on areas most important to them and most relevant to the sports business.

The SportsCenter offers graduate courses online for those students who want to take advantage of the SportCenter's educational opportunities via the Internet. Currently, three classes are available each semester.

For more information and to obtain an application for the Sport Leadership program, phone (804) 828-TEAM (8326), (877) 799-4287 (toll free), fax: (804) 828-7526 or visit the Web site: <http://www.vcu.edu/sportcenter>.

### Program of study: Sport Leadership

<b>Required core</b>	15
RPSL 603 Research (3)	
RPSL 630 Sociology of Sport (3)	
RPSL 632 Sports Business (3)	
RPSL 634 Coaching and Administration (3)	
RPSL 635 Leadership Models in Sports (3)	
<b>Selective courses</b>	9-12
RPSL 594 Topical Seminar (1-3, maximum 6)	

RPSL 604 Research Practicum (3)	
RPSL 606 Directed Readings (3)	
RPSL 609 Program Development and Management (3)	
RPSL 631 Contemporary Issues (3)	
RPSL 633 Sports Marketing (3)	
RPSL 651 Topics in Recreation (1-3, maximum 9)	
<b>Field experiences</b>	9-12
RPSL 607 Field Instruction (3)	
RPSL 641 Independent Study (1-3)	
RPSL 604 Research Practicum (3)	
RPSL 700 Externship (3-6)	
Total required	36

## Division of Teacher Education

Adeyemi, Cheyrl H., Assistant Professor Ed.S., University of District of Columbia Ph.D., Illinois State University (Pending)	
Alder, Nora I., Associate Professor Ed.D. University of Nevada-Las Vegas Curriculum, diversity, classroom management, qualitative research.	
Boraks, Nancy, Associate Professor Emerita Ph.D. University of Colorado	
Boyle, Joseph R., Associate Professor Ph.D. University of Kansas Learning disabilities, academic interventions/strategies, inclusion.	
Brittain, Mary M., Associate Professor Emerita Ph.D. University of Miami	
Christenbury, Leila, Professor Ed.D. Virginia Polytechnic Institute and State University Teaching methods, adolescent literature, issues in American education.	
Davis, Michael D., Professor and Senior Associate Dean Ph.D. University of Illinois School change, issues in teacher education.	
Duncan, Patricia H., Professor Emerita Ed.D. University of Georgia	
Fallen, Nancy H., Professor Emerita Ed.D. University of Maryland	
Fox, Jill E., Associate Professor Ph.D. University of North Texas Early education, human development, family studies.	
Garner, Howard G., Professor Emeritus Ph.D. University of Florida	
Gerber, Paul J., Professor Ph.D. University of Michigan Special education, learning disabilities, consultation.	
Gross, Ena, Associate Professor Ph.D. Georgia State University Use of calculators in learning mathematics in grades K-12, instructional and assessment strategies for mathematics.	
Hill, Ada D., Associate Professor Emerita Ed.D. American University.	
Hodges, James O., Associate Professor Emeritus Ph.D. University of Colorado	
Judd, William J., Associate Professor Emeritus Ph.D. Syracuse University	
Kregel, John, Professor Ed.D. University of Georgia Severe disabilities, vocational education for students with disabilities.	
McDonnough, Jackie, Assistant Professor Ph.D. University of Virginia Science education.	
McLeod, Alan M., Professor and Special Assistant to the Dean Ed.D. University of Virginia Adolescent literature (teaching literature), teaching writing.	
Oehler, John S., Professor and Executive Director, Center for School and Community Collaboration Ed.D. University of North Carolina Staff development, curriculum and instruction.	
Orelowe, Fred P., Professor and Executive Director, Virginia Institute for Developmental Disabilities Ph.D. University of Illinois Special education, severe disabilities.	
Pieper, Alice M., Associate Professor Emerita Ph.D. University of Maryland	
Reed-Victor, Evelyn, Assistant Professor Ph.D. College of William and Mary Early intervention, assessing child and environmental protective factors.	
Reed, Daisy F., Professor Emerita Ed.D. Teachers College, Columbia University	
Rezba, Richard J., Professor Emeritus Ph.D. Indiana University Scientific inquiry, technology.	
Rhodes, Joan A., Visiting Assistant Professor Ph.D. Virginia Commonwealth University Reading/language arts.	
Richardson, Judy S., Professor Ph.D. University of North Carolina Reading in content areas, remedial and beginning secondary and adult beginning readers, English as a Second Language.	
Robnott, Valerie J., Assistant Professor Ph.D., University of Virginia Reading/language arts.	
Rossi, John A., Associate Professor Ph.D. University of Wisconsin-Madison History, social studies, curriculum.	
Simon, Diane J., Associate Professor and Associate Dean Ph.D. New York University Special education, deaf education.	
Sparks, Howard L., Professor Emeritus Ed.D. Teachers College, Columbia University	
Sutherland, Kevin S., Assistant Professor Ph.D. Vanderbilt University Emotional/behavioral disorders.	
Tarter, Martin A., Associate Professor Emeritus Ed.D. University of Virginia	
Thoma, Colleen, Assistant Professor Ph.D. Indiana University Mental and cognitive disabilities	
Van de Walle, John, Professor Emeritus Ph.D. Ohio State University Concept development in early childhood mathematics, instructional strategies for elementary school mathematics.	

Wehman, Paul, Professor and Executive Director,  
Rehabilitation Research and Training Center  
Ph.D. University of Wisconsin  
Severe disabilities, vocational-career education.

Welch, Rizpah, Professor Emerita  
Ed.D. Indiana University

White, Doris, Associate Professor  
Ed.D. University of Illinois  
Cognition and learning styles of young children,  
formation of values and attitudes among young  
minority children.

Wood, Judy W., Professor Emerita  
Ph.D. University of Southern Mississippi

Zaret, Esther, Professor Emerita  
Ph.D. University of Wisconsin

## Division mission

The Division of Teacher Education is committed to excelling in the initial and continuing preparation of teachers for the commonwealth, with particular emphasis on early childhood through secondary education in diverse settings; to collaborating with colleagues in educational agencies; to applying research about learning in classrooms; to undertaking scholarly endeavors that examine learning and teaching processes; and to providing technical assistance to special populations and service to school divisions and agencies.

The division values:

- providing the highest quality teaching and opportunities for learning,
- integrating academic disciplines, professional studies and clinical experiences as program components for student learning,
- collaborating in the preparation of teachers and in the continuing development of faculty both within the university and in public and private educational settings,
- enabling teachers and intending teachers to work effectively with students from diverse populations and those with special needs,
- helping intending teachers become effective decision makers and practicing teachers refine their decision-making skills in the roles for which they are preparing,
- effectively modeling the use of technology to enhance and foster learning,
- incorporating, among others, developmental, cognitive and functional approaches and content areas in the preparation of personnel in early, middle, secondary and special education programs,
- serving the university through faculty participation in institutional commit-

tees and task forces, programs, and supportive research and service institutes and centers within the university, and

- serving the community through technical assistance, workshops, consulting education activities, Professional Development Schools and other partnerships.

The Division of Teacher Education houses seven degree and certificate granting programs.

Master of Education in Curriculum and Instruction  
Master of Education in Reading  
Master of Education in Special Education  
Master of Teaching  
Post-baccalaureate Certificate for Library/Media Specialist  
Post-baccalaureate Certificate in Teaching  
Post-master's Certificate for Reading Specialist

## Licensure and endorsement requirements

Individuals seeking initial teacher licensure must meet all liberal arts and sciences requirements of the program and they also must be admitted to teacher preparation. Applications for "Admission to Teacher Preparation" may be obtained from the Office of Academic Services.

Applicants for the master of education (M.Ed.) degree who do not already hold a valid professional teaching license should expect to complete additional course work and other experiences prior to the granting of the degree. Such candidates must submit passing scores on PRAXIS I as part of the admission to teacher preparation process. Students should plan carefully with their advisers to determine what additional undergraduate or graduate course work and experiences must be completed so that both degree and licensure requirements are met prior to awarding of the master of education degree.

The Division of Teacher Education offers the master of teaching degree (M.T.) in an Extended Teacher Preparation Program integrating undergraduate and graduate work and leading to the awarding of a baccalaureate degree from the College of Humanities and Sciences and the M.T. degree from the School of Education (see the Undergraduate Bulletin).

The Post-baccalaureate Certificate in Teaching (secondary education only) is designed for students with a bachelor's degree in areas other than education or an advanced degree in some other field and who wish to become teachers but do not seek a master's degree. Students complete a minimum of 24 hours beyond the bachelor's level in a program area. Interested individuals should con-

sult the Post-baccalaureate Certificate section elsewhere in this chapter for information and currently recognized shortage areas. Candidates must submit passing scores on PRAXIS I as part of the admission to teacher preparation process.

The Post-master's Certificate for Reading Specialist is designed for holders of master's degrees who are already licensed as teachers and have at least three years of teaching experience. Students complete a minimum of 21 graduate credits beyond their master's degree. Interested individuals should consult the post-master's certificate section later in the teacher education description of programs.

The Post-baccalaureate Certificate for Library/Media Specialist is designed for individuals seeking endorsement as library/media specialists in Virginia. Students complete a minimum of 24 credits beyond their baccalaureate degree. Individuals interested in this endorsement should consult the post-baccalaureate section later in the teacher education description of programs.

Requirements for both initial licensure and added endorsements include taking and achieving state-established pass scores on the PRAXIS II specialty area tests.

## Professional development schools

VCU works with a number of school divisions in the Richmond metropolitan area. Agreements have been developed with particular schools where the faculty as a whole care about working with future teachers, participating in staff development and welcoming university faculty seeking faculty development, and exploring research on questions of interest to the school. Such schools are designated Professional Development Schools. For 2001-02, formal agreements were with Mary Munford Elementary, Glenn Lea Elementary (Henrico County) and the Governor's School for Government and International Studies (Richmond, serving more than a dozen area school divisions).

## Teacher as decision maker

The guiding theme of programs in the Division of Teacher Education is "teacher as decision maker." Courses and experiences provide opportunities for individuals to consider means of building on appropriate knowledge to make instructional and classroom decisions. (See section on this subject in the Undergraduate Bulletin for the Division of Teacher Education.)

## M.Ed. in Curriculum and Instruction Program

The Master of Education in Curriculum and Instruction Program is designed to provide professional and cognate experiences for veteran teachers. Individuals may select to concentrate in early childhood education, middle education, secondary education, gifted education, or library/media endorsement or instructional technology. Content courses within the program are selected in consultation with an adviser from the appropriate concentration.

	credits
<b>Foundations</b>	9
Human development and learning (3) (one of the following)	
EDUS 602 Adolescent Growth and Development	
EDUS 603 Seminar in Child Growth and Development	
EDUS 604 Adult Development	
EDUS 607/PSYC 607 Advanced Educational Psychology	
EDUS 609 Learning Theories in Education	
Cultural, historical and philosophical (3) (one of the following)	
EDUS 601 Philosophy of Education	
EDUS 608 History of Western Education	
EDUS 610 Social Foundations of Education	
EDUS 612 Education and the World's Future	
EDUS 614 Contemporary Educational Thought	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	
Research (3)	
EDUS 660 Research Methods in Education	
<b>Process level</b>	6
TEDU 615 Curriculum Development	
TEDU 617 Instructional Models	
<b>Content level or area of focus</b>	15
TEDU 680 Externship Proposal Seminar	3
<b>TEDU 700 Externship</b>	3
<b>Total</b>	<b>36</b>

Externships require a well-conceived proposal developed with an adviser and submitted the semester prior to the experience. Guidelines are in the program handbook, which may be obtained from the division office.

## M.Ed. in Reading Program

The Master of Education in Reading Program is designed to provide experienced teachers who are prospective reading specialists, with a program of sequential and integrated experiences in areas of the reading curriculum ranging from preschool to adult

levels. Students will gain an understanding of the developmental and diagnostic processes involved in teaching reading and the language arts and will become familiar with the resource and supervisory functions, which are part of the specialist role. Prior to graduation, students must complete a reading portfolio documenting their work in the program and related work experiences. The M.Ed. in Reading is an approved program (K-12) for students who meet Virginia State Department of Education requirements. The reading specialist endorsement also requires completion of three years of teaching in a reading related field.

A cooperative agreement has been established with Virginia State University to permit selected, qualified students to complete the M.Ed. in Reading Program. Up to 12 credit hours from an approved list may be transferred from the cooperating institution. Interested students should contact the Division of Teacher Education.

	credits
<b>Foundations</b>	9
Human development and learning (3) (one of the following)	
EDUS 602 Adolescent Growth and Development	
EDUS 603 Seminar in Child Growth and Development	
EDUS 604 Adult Development	
EDUS 607/PSYC 607 Advanced Educational Psychology	
EDUS 609 Learning Theories in Education	
Cultural, historical, and philosophical (3) (one of the following)	
EDUS 601 Philosophy of Education	
EDUS 608 History of Western Education	
EDUS 610 Social Foundations of Education	
EDUS 612 Education and the World's Future	
EDUS 614 Contemporary Educational Thought	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	
Research (3)	
EDUS 660 Research Methods in Education	
<b>Program</b>	15-18
TEDU 561 Reading Foundations: Sociological/Psychological Perspectives	
TEDU 562 Reading Instruction in the Content Areas	
TEDU 672 Internship (in Reading)	
READ 600 Analysis and Correction of Reading Problems	
READ 605 Organizing and Implementing Reading Programs	
<b>Restricted elective</b>	
TEDU 525 Teaching Language Arts	
TEDU 549 Diagnostic Reading in the Secondary School	

TEDU 552/ENGL 552 Teaching English as a Second Language  
READ 601 Psycholinguistics and Language Arts Curriculum  
READ 602 Teaching Reading to Adults  
TEDU 528 Children's Literature II  
ENED 601 Young Adult Literature

<b>Electives</b>	9
<b>Total</b>	<b>36</b>

Note: Electives should be used to ensure state regulations for the endorsement are met.

## M.Ed. in Special Education Program

The Master of Education in Special Education Program prepares graduates for work in one of five areas: **early childhood special education, emotional disturbance, learning disabilities, mental retardation or severe disabilities**. Applicants who do not already hold a teaching license must meet both licensure and degree requirements prior to the awarding of the master of education degree unless exempted as a professional from another discipline. Students should plan carefully with their adviser to ensure that the appropriate courses and experiences are completed. Successful completion of one of the degree programs leads to endorsement in early childhood special education, emotional disturbance, learning disabilities, mental retardation or severe disabilities.

## Early Childhood Special Education Program

The Master of Education in Early Childhood Special Education Program is a sequentially planned series of courses and clinical experiences designed to prepare individuals to work with young children, ages birth through five, with developmental disabilities and their families. Successful completion of the degree program qualifies students for teacher licensure with endorsement in early childhood special education by the Virginia Department of Education. Students are prepared to intervene with infants and young children representing a wide range of abilities, including those considered to be at risk to children with severe disabilities. As a result of training, students will be prepared to fill a variety of early intervention roles. The program can be completed in five semesters of full-time study or six semesters of part-time study.

<b>Foundations</b>	credits 9
Human development and learning (3) EDUS 603 Seminar in Child Growth and Development	
Cultural, historical and philosophical (3) (one of the following) EDUS 601 Philosophy of Education EDUS 608 History of Western Education EDUS 610 Social Foundations of Education EDUS 612 Education and the World's Future EDUS 614 Contemporary Educational Thought EDUS 673 Seminar on Educational Issues, Ethics and Policy	
Research (3) EDUS 660 Research Methods in Education	
<b>Program core</b>	15
ECSE 601 Assessment of Infants and Young Children with Disabilities (3) ECSE 602 Instructional Programming for Infants and Young Children with Disabilities (3) ECSE 603 Program Management, Collaboration, and Service Coordination in Early Childhood Special Education (3) TEDU 700 Externship (2 semesters; 3 credits each) (6)	
<b>Program track</b>	18-21
With thesis TEDU 798 Thesis (6) Selectives (from following list) (15)	
Without thesis Selectives (from following list) (15) Electives (from following list) (3)	
<b>Total</b>	42-45
<b>Selectives</b>	
TEDU 541 Infants and Young Children With Special Needs*	
TEDU 542 Family/Professional Partnerships	
TEDU 630 Trends in Special Education*	
TEDU 558 Educating Students with Multiple Disabilities	
TEDU 631 Behavior Management of Students with Disabilities	
MNRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities	
TEDU 561 Reading Foundations	
* Students may not take both TEDU 541 and TEDU 630.	
<b>Electives</b> (3-6 credits as determined by adviser)	
TEDU 625 Young Child and the Curriculum	
TEDU 651 Topics in Education: Current Issues in Early Childhood Education	
IDDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities	
SLWK 711 Strategies for Social Work Planning and Administrative Practice	
ADMS 632 Administration and Supervision of Special Education	
TEDU 672 Internship	
MNRT 610 Teaching Strategies for Students with Severe Disabilities	

## Emotional Disturbance Program

The Master of Education in Emotional Disturbance Program provides teachers the professional knowledge and skills needed to work in a variety of settings: general education classrooms (where children with special needs are being included), resource rooms, self-contained classrooms and residential programs. In developing teacher competencies the master's program focuses on specific skills and strategies for diagnosing and remediating behavior and learning problems of students with emotional disturbance. The educational and therapeutic interventions taught in the program are based on a number of theoretical models including behavioral, psychodynamic, ecological and psychoeducational. An emphasis of the program is on collaboration with parents, with professionals from other disciplines, and with other community agencies and programs.

Program course work builds on a strong foundation of knowledge in psychology, child development, research and education. Students receive in-depth training in how to identify students with emotional disturbances, how to diagnose individual needs, and how to plan and deliver individualized programs in a team setting. Special training is provided in the teaching of reading, behavior management and the use of interactive strategies teaching positive social skills. Graduates are prepared to work with students in completing a variety of transitions, such as from special education to the general education classroom or from high school to employment and independent living.

A program strength is the variety of placement opportunities for practica and externship experiences. These include a range of public and private schools and mental health programs in the Richmond area which allow graduate students to select field experiences that are consistent with their professional goals. Previous teaching experience is valued, but not required. Students without previous teaching experience must complete a practicum in addition to the externship. When students complete the program, they are eligible for licensure by the Virginia Department of Education with an endorsement to teach students with emotional disturbance in grades K-12. Students are offered the option of taking a full-time externship for one semester, a half-time externship for each of two semesters or an on-the-job externship for the duration of one academic year following one year of successful teaching in that setting.

A personal interview with program faculty is required as a part of the admission process.

<b>Foundations</b>	credits 9
Human development and learning (3) (one of the following) EDUS 602 Adolescent Growth and Development EDUS 603 Seminar in Child Growth and Development EDUS 604 Adult Development EDUS 607/PSYC 607 Advanced Educational Psychology EDUS 609 Learning Theories in Education	
Cultural, historical, and philosophical (3) (one of the following) EDUS 601 Philosophy of Education EDUS 608 History of Western Education EDUS 610 Social Foundations of Education EDUS 612 Education and the World's Future EDUS 614 Contemporary Educational Thought EDUS 673 Seminar on Educational Issues, Ethics, and Policy	
Research (3) EDUS 660 Research Methods in Education	
<b>Special education core</b>	18
TEDU 630 Trends in Special Education TEDU 631 Behavior Management of Students with Disabilities TEDU 632 Secondary Programming for Students with Disabilities TEDU 533 Educational Assessment of Individuals with Exceptionalities SELD 530 Language Disabilities: Assessment and Teaching TEDU 566 Diagnosis and Remediation in Reading (Note: course has prerequisite.)	
<b>Specialization core</b>	15
EMOD 500 Characteristics of Students with Emotional Disturbance (3) EMOD 501 Teaching Students with Emotional Disturbance (3) EMOD 603 Interactive Strategies in Teaching Students with Special Needs (3) TEDU 700 Externship (6)	
<b>Total</b>	42

## Learning Disabilities Program

The Master of Education in Learning Disabilities Program develops and refines the competencies needed for work with persons with learning disabilities in collaborative resource and self-contained settings at all levels, as well as in a variety of cultural environments. Students enrolling in the program will be required to complete two semesters of externship during the regular academic year and may be required to complete additional fieldwork activities and/or credits. Students in bachelor's degree or extended programs who are planning to enroll are encouraged to

consult with program faculty for assistance in selecting elective courses that provide a sound foundation and may reduce the number of additional courses necessary for certification.

Program course work encompasses broad concepts of education, research, development, related disciplines and special education to build a foundation of professional knowledge and understanding. Specialized courses develop the intensive diagnostic/remedial/decision-making/consultative skills and understandings required of a professional in learning disabilities, including the ability to recognize educational and social problems, to formulate effective individualized instructional interventions using a variety of methodologies and modifications, to incorporate accommodations and transitions into program plans, and to consult productively with appropriate personnel in the development of maximum educational opportunities for students with learning disabilities.

Applicants who hold a bachelor's degree in non-education or non-special education majors must complete a review process with program faculty as part of the admission process.

	credits
<b>Foundations</b>	9
Human development and learning (3) (one of the following)	
EDUS 602 Adolescent Growth and Development	
EDUS 603 Seminar in Child Growth and Development	
EDUS 607/PSYC 607 Advanced Educational Psychology	
EDUS 609 Learning Theories in Education	
Cultural, historical and philosophical (3) (one of the following)	
EDUS 601 Philosophy of Education	
EDUS 608 History of Western Education	
EDUS 610 Social Foundations of Education	
EDUS 614 Contemporary Educational Thought	
Research (3)	
EDUS 660 Research Methods in Education	
<b>Special education core</b>	18
TEDU 630 Trends in Special Education	
TEDU 631 Behavior Management of Students with Disabilities	
TEDU 633 Educational Assessment of Individuals with Exceptionalities	
SELD 530 Language Disabilities: Assessment and Teaching	
Academic remediation elective (select one)	
TEDU 566 Diagnosis and Remediation in Reading	
TEDU 569 Diagnosis and Remediation in Mathematics	
Career/vocational elective (select one)	
EDUS 503 Guidance for Exceptional Children	
RHAB 611 Individual Counseling Approaches in Rehabilitation	

RHAB 623 Occupational Information, Analysis and Placement	
<b>Specialization core</b>	15
SELD 600 Characteristics of Persons with Learning Disabilities	
SELD 601 Methods of Clinical Teaching	
TEDU 700 Externship (Optional) (6)	
<b>Total</b>	<b>42</b>

## Mental Retardation Program

Graduates of the Master of Education in Special Education – Mental Retardation Program may fill roles as resource room, modified resource room, or self-contained classroom teachers in varied urban, suburban or rural areas. Some graduates are employed in residential programs for individuals with mental retardation or in programs in community or state department settings. The commonwealth of Virginia licenses their employment in public or private settings serving students from kindergarten through secondary school age.

The course of study includes a minimum of 42 credits designed around three components: foundations, special education core and specialization in mental retardation. The foundations component is comprised of nine semester hours that focus on three distinct content areas: human development and learning, cultural, philosophical and historical foundations, and research and evaluation methods. The special education core of 18 semester hours focuses on curriculum that is rooted in special education for individuals with mental retardation as well as other disabilities. The specialization in mental retardation is comprised of 15 semester hours that focus on the development of specific advanced competencies for filling the varying roles of professionals in mental retardation. With previous licensure in mental retardation, the program will require approximately one year of full-time study for completion. Students seeking initial licensure should consider the master of teaching which is designed for initial licensure seekers.

	credits
<b>Foundations</b>	9
Human development and learning (3) (one of the following)	
EDUS 602 Adolescent Growth and Development	
EDUS 603 Seminar in Child Growth and Development	
EDUS 604 Adult Development	
EDUS 607/PSYC 607 Advanced Educational Psychology	
EDUS 609 Learning Theories in Education	

Cultural, historical and philosophical (3) (one of the following)	
EDUS 601 Philosophy of Education	
EDUS 608 History of Western Education	
EDUS 610 Social Foundations of Education	
EDUS 612 Education and the World's Future	
EDUS 614 Contemporary Educational Thought	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	
Research (3)	
EDUS 660 Research Methods in Education	

<b>Special education core</b>	18
ADMS 632 Administration and Supervision of Special Education	
TEDU 630 Trends in Special Education	
TEDU 632 Secondary Programming for Students with Disabilities	
TEDU 633 Educational Assessment of Individuals with Exceptionalities	
SLED 530 Language Disabilities: Assessment and Teaching	
Elective	

<b>Specialization core</b>	15
MNRT 556 Introduction to Mental Retardation (3)	
MNRT 560 Curriculum Design for Students with Mental Retardation (3)	
TEDU 566 Diagnosis and Remediation in Reading (3)	
TEDU 700 Externship (6)	

<b>Total</b>	<b>42</b>
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## Severe Disabilities Program

The Severe Disabilities Program is designed to prepare teachers to work with students ages 5 to 21 in public school settings. Throughout the program, emphasis is placed on person-centered planning, school and community inclusion, transdisciplinary teamwork and the role of the family. Courses address physical and medical management issues, functional assessment strategies, longitudinal curriculum planning, systematic instruction, augmentative and alternative communication systems, assistive technology, transition from school to adulthood, positive behavioral supports and the special needs of students with autism or physical, sensory and health-related disabilities.

Students enrolled in the program complete a field-based externship in their school (if they currently serve students with severe disabilities) or in one of the many public schools in the Richmond area. The externship is designed to meet the student's needs for professional development and is generally completed toward the end of the master's program.

Successful completion of the 42 credit hour program results in Virginia endorsement in severe disabilities, in addition to the master of education degree.

<b>Foundations</b>	9
Human development and learning (3) (one of the following) EDUS 602 Adolescent Growth and Development EDUS 603 Seminar in Child Growth and Development EDUS 607/PSYC 607 Advanced Educational Psychology EDUS 609 Learning Theories in Education Cultural, historical and philosophical (3) (one of the following) EDUS 601 Philosophy of Education EDUS 608 History of Western Education EDUS 610 Social Foundations of Education EDUS 612 Education and the World's Future EDUS 614 Contemporary Educational Thought EDUS 673 Seminar on Educational Issues, Ethics and Policy Research (3) EDUS 660 Research Methods in Education	
<b>Special education core</b>	15
ADMS 632 Administration and Supervision of Special Education TEDU 542 Family/Professional Partnerships TEDU 631 Behavior Management of Students with Disabilities TEDU 632 Secondary Programming for Students with Disabilities Selective IDDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities or a course of the student's choice with adviser's permission	
<b>Specialization core</b>	18
TEDU 558 Educating Students with Multiple Disabilities (3) TEDU 700 Externship (6) MNRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities (3) MNRT 610 Teaching Strategies for Students with Severe Disabilities (3) MNRT 602 Assessment and Curriculum Development for Students with Severe Disabilities (3)	
<b>Total</b>	<b>42</b>

## Master of Teaching Programs

The Master of Teaching programs are designed to incorporate eligibility for initial teaching licensure in Virginia in early childhood/elementary, middle, secondary (biology, chemistry, English, French, German, history, history and social studies, mathematics, physics, science, Spanish) or special education (dual endorsement in emotional disturbance and mental retardation). Note: Individuals seeking initial licensure in early childhood special education or severe disabilities should refer to the preceding master of education in special education listing.

The approved programs include undergraduate qualifying courses as well. Individuals pursuing the extended program are awarded undergraduate and graduate degrees simultaneously; baccalaureate degree recipients who meet the admission criteria also may pursue the master of teaching degree program, including the qualifying courses.

## Admission criteria

Admission criteria for holders of baccalaureate degrees are the same as for the extended program, including admission to teacher preparation.

## Liberal arts requirements

Additionally, individuals pursuing licensure must have a liberal arts degree, as defined by VCU, germane to what they propose to teach: for secondary, a major in the subject to be taught; for middle, a major in one of the subjects traditionally taught in middle grades (English, mathematics, history and social studies or a science); for early childhood/elementary or special education, a major in one of the content areas typically taught (mathematics, a science, English, history or a social science) is particularly appropriate, but majors in other liberal arts areas are acceptable.

Individuals who do not hold such a degree may satisfy it as follows:

- **for middle or secondary education**, the required and, as appropriate, cognate courses in the pertinent academic major,
- **for early childhood/elementary or special education**, a liberal arts equivalency totaling at least 70 arts and sciences semester credits and consisting of no less than six hours in English (including composition), six hours in mathematics and statistics, three hours in human behavior and institutions, 12 hours in humanities, and seven to 12 hours in science (early childhood/ elementary requires 12 credits with at least one laboratory course in a life science and another laboratory course in a physical science; special education requires seven credits with at least one laboratory course); and the remaining 31 credits (early childhood/elementary) or 36 credits (special education) from courses in literature, history, art or music history, foreign languages, philosophy and religious studies, African-American studies, anthropology, economics, geography, international studies, political science,

psychology, sociology, urban studies, women's studies or classical studies.

Additional information about the liberal arts requirements for early childhood/elementary, middle, secondary and special education is listed under the pertinent program in the Division of Teacher Education section of the Undergraduate Bulletin.

See the Undergraduate Bulletin for detailed information on the requirements of the various baccalaureate degrees in the College of Humanities and Sciences.

## State Licensure Examination

Successful completion (defined as meeting or exceeding the scores established by the Virginia State Board of Education) on the state mandated licensure examination, currently PRAXIS I, is required for admission to teacher preparation. Students must be admitted to teacher preparation before enrolling in any clinical course, including practica and corequisites to clinical courses.

Requirements for both initial licensure and added endorsements include taking and achieving state-established pass scores on the PRAXIS II specialty area tests.

## Standards of learning

Much of the pre-kindergarten through grade 12 curriculum is based on the commonwealth of Virginia's current Standards of Learning (SOLs). Individuals preparing to be teachers are advised to examine the SOLs for the grade levels and content areas they plan to teach. The content and concepts associated with one or more SOLs may be incorporated in a course in the College of Humanities and Sciences curriculum and not a college curriculum, one may need to study several of these SOLs on his/her own. The Division of Teacher Education Web site, connected to the School of Education Web page has a link to the SOLs.

## Technology standards

The use of computers, graphing calculators, science probeware, and other technologies is integral to successful teaching in today's schools. Individuals preparing to teach must be competent on each of the eight standards in Virginia's Technology Standards for Instructional Personnel. These standards may be reached through the Division of Teacher Education Web page.

Students are advised to consult with the professional studies adviser regarding the program's requirements for demonstrating

competence. Several of the standards may be documented as met by passing the Computer Literacy Examination offered online through SmartForce.

## Early childhood/elementary education, P-6

Consult with the appropriate professional studies adviser, for in addition to changes in professional studies there are liberal arts requirements. (Refer to the P-6 program in the Undergraduate Bulletin.)

### Professional studies requirements (60 credits)

Undergraduate	credits
EDUS 300 Foundations of Education	3
PSYC 301 Child Psychology	3
EDUS 305/PSYC 305 Educational Psychology	3
TEDU 310 Practicum I (with TEDU 414 and TEDU 426)	2
TEDU 310 Practicum II	2
TEDU 351/ENGL 351 Children's Literature I	3
PHED 390 Physical Education for the Elementary Teacher	3
TEDU 414 Curriculum and Methods for Young Children	4
TEDU 426 Teaching Reading and Other Language Arts	3
	<hr/> 26
Graduate	credits
TEDU 517 Science Education in the Elementary School	3
TEDU 522 Teaching Mathematics for Elementary Education	3
TEDU 566 Diagnosis and Remediation in Reading	3
TEDU 591 Social Studies Education in the Elementary School	3
TEDU 605 Theory and Practice of Educating Individuals with Special Needs	3
EDUS 607/PSYC 607 Advanced Educational Psychology	3
TEDU 626 Home-School Communication and Collaboration	3
TEDU 672 Internship I and II (K and grades 1-5 placements)	9
EDUS 673 Seminar on Educational Issues Ethics and Policy	3
	<hr/> 33

- \* All 500-level methods courses (TEDU 517, 522, 566, and 591) must have already been completed or taken concurrently with TEDU 310, Practicum II.
- \* At least 33 credit hours must be taken at the graduate level.

## Middle education, 6-8

Consult with the appropriate professional studies adviser, for in addition to changes in professional studies there are liberal arts

requirements. (Refer to the 6-8 program in the Undergraduate Bulletin.)

### Professional Studies Requirements (45 credits)

Undergraduate	credits
EDUS 300 Foundations of Education	3
EDUS 301 Human Development and Learning	3
TEDU 310 Practicum A (concurrent with TEDU 544)	1
TEDU 310 Practicum B (concurrent with TEDU 521 or 540)	1
TEDU 310 Practicum C (concurrent with TEDU 550 or the course not taken with B)	1
TEDU 407 Educational Media: Utilization	3
	<hr/> 12
Graduate	credits
Choose two of the following	
TEDU 521 Teaching Mathematics for Middle Education	3
TEDU 540 Teaching Middle and High School Science	3
TEDU 550 Teaching Interdisciplinary Language Arts and Social Studies in the Middle School	3
Complete each of these courses	
TEDU 544 Introduction to the Middle School	3
TEDU 562 Reading Instruction in the Content Areas	3
EDUS 607/PSYC 607 Advanced Educational Psychology	3
TEDU 672 Internship I and II	9
EDUS 673 Seminar on Educational Issues, Ethics and Policy	3
TEDU 681 Investigations and Trends in Teaching*	3
Graduate selective chosen from the following	3
TEDU 554/CMSC 554 Applications of Computers in the Teaching of Mathematics I	
TEDU 556 Computer Applications in Education	
TEDU 600 Organizing for Effective Classroom Instruction	
TEDU 605 Theory and Practice of Educating Individuals with Special Needs	
TEDU 626 Home-school Communication and Collaboration	
EDUS 660 Research Methods in Education	
ENED 601/ENGL 601 Young Adult Literature	
	<hr/> 33

\* Pertinent subject section (e.g., English, mathematics, science or social studies).

## Secondary education, 6-12

The Master of Teaching in Secondary Education Program leads to endorsement in one of these disciplines: biology, chemistry, economics, English, French, geography, German, history, mathematics, physics, political science, science, Spanish.

	credits
<b>Qualifying courses (undergraduate)</b>	9
EDUS 300 Foundations of Education	
EDUS 301 Human Development and Learning	
TEDU 310 Practicum (2 credits with TEDU 537, 1 credit with TEDU 540, 543, 545, 547 or 548)	
<b>Foundation courses</b>	6
EDUS 607/PSYC 607 Advanced Educational Psychology	
EDUS 673 Seminar on Educational Issues, Ethics and Policy	
<b>Concentration courses</b>	9
TEDU 537 Secondary School Curriculum	3
<b>Choose discipline for licensure/endorsement sought</b>	3
TEDU 540 Teaching Middle and High School Sciences	
TEDU 543 Teaching Secondary School Foreign Languages	
TEDU 545 Teaching Secondary School Mathematics	
TEDU 547 Teaching Secondary School Social Studies	
TEDU 548 Teaching Secondary School English	
TEDU 681 Investigations and Trends in Teaching	
<b>Selectives</b>	9
<b>Graduate selectives are to be chosen from the following:</b>	
1. Three credits from:	
Technology:	
TEDU 556 Computer Applications in Education	
TEDU 554/CMSC 554 Applications of Computers in the Teaching of Mathematics I	
Reading:	
TEDU 562 Reading Instruction in the Content Areas	
Classroom management:	
TEDU 600 Organizing for Effective Classroom Instruction	
TEDU 631 Behavior Management of Students with Disabilities	
Special education:	
TEDU 605 Theory and Practice of Educating Individuals with Special Needs	
2. Six graduate credits from other courses in (1) above, from the academic major, or from courses such as these	
TEDU 521 Teaching Mathematics for Middle Education (required in math)	
TEDU 626 Home-School Communication and Collaboration	
ENED 601/ENGL 601 Young Adult Literature	

All selectives should be chosen in consultation with the professional studies adviser.

Note: A minimum of 21 credits, including EDUS 300, EDUS 301, TEDU 310, TEDU 537, one of (TEDU 540, 543, 545, 547 or 548), EDUS 607 or 673 and the required selective (see 1 above), must be completed prior to the internship.

<b>Clinical experience</b>	9
TEDU 672 Internship	
Total	<hr/> 42*

\* At least 33 credit hours must be taken at the graduate level.



## Special education, K-12

The Master of Teaching in Special Education Program leads to dual endorsement in two of these three special education areas: emotional disturbance, learning disabilities or mental retardation. The professional sequence in the Master of Teaching in Special Education Program is designed to develop competencies needed to work with children and youth in two of these areas of special education in kindergarten through 12th grade. (All courses listed below are three credits unless otherwise indicated.)

### Required courses credits 30

Undergraduate  
EDUS 300 Foundations of Education  
TEDU 330 Survey of Special Education  
EDUS 301 Human Development and Learning or  
PSYC 305 Educational Psychology  
TEDU 426 Teaching Reading and Other  
Language Arts  
Graduate  
TEDU 521 Teaching Mathematics for Middle  
Education or TEDU 522 Teaching Mathematics  
for Elementary Education  
TEDU 531 Collaborative/Consultation Skills for  
Working with Families and Professionals  
TEDU 533 Educational Assessment of Individuals  
with Exceptionalities  
SELD 530 Language Disabilities: Assessment and  
Teaching or MNRT 500 Language Intervention  
for Young Children and Learners with Severe  
Disabilities  
TEDU 631 Behavior Management of Students  
with Disabilities  
TEDU 632 Secondary Programming for Students  
with Disabilities

### Selectives 9

Social/cultural foundations selective (choose one from  
the following list)

EDUS 601 Philosophy of Education  
EDUS 608 History of Western Education  
EDUS 610 Social Foundations of Education  
EDUS 612 Education and the World's Future  
EDUS 614 Contemporary Educational Thought  
EDUS 673 Seminar on Educational Issues, Ethics  
and Policy

Educational/psychological foundations selective  
(choose one from the following list)  
Non-psychology majors must take EDUS/PSYC 607  
Advanced Educational Psychology  
Psychology majors may select one of the following:  
EDUS 602 Adolescent Growth and Development  
EDUS 603 Seminar in Child Growth and Development  
EDUS/PSYC 607 Advanced Educational Psychology  
EDUS 609 Learning Theories in Education  
Option: With adviser's permission, students with a  
strong background in educational psychology and/or  
child development may select EDUS 660 Research  
Methods in Education.

Graduate or undergraduate selective  
This one selective is a course at the 600-level or below  
chosen from the following list:

TEDU 542 Parent/Professional Partnership  
A second language course  
A second reading course  
A course in the third special education area  
(emotional disturbance, learning disabilities  
or mental retardation)  
A course in early childhood special education (ESCE)  
A course in counselor education (CLED)  
A course in rehabilitation counseling (RHAB)  
A course approved by the program faculty

### Concentration courses 28

(two of the following three special education areas)  
12 semester credit hours in courses and  
16 semester credit hours in clinical experiences

Emotional disturbance  
EMOD 400 Characteristics of Children/  
Adolescents with Emotional Disturbance  
EMOD 501 Teaching Students with Emotional  
Disturbance  
Clinical experience:  
TEDU 310 Practicum: Emotional Disturbance 2  
EMOD 672 Internship: Emotional Disturbance 6

Learning Disabilities  
TEDU 444 Introduction to Learning Disabilities  
SELD 501 Methods of Clinical Teaching  
Clinical experience:  
TEDU 310 Practicum: Learning Disabilities 2  
SELD 672 Internship: Learning Disabilities 6

Mental retardation  
MNRT 400 Characteristics of Children and Youth  
with Mental Retardation  
MNRT 560 Curriculum Design for Students with  
Mental Retardation  
Clinical experience:  
TEDU 310 Practicum: Mental Retardation 2  
MNRT 672 Internship: Mental Retardation 6

Total 67\*

\* A minimum of 33 credit hours must be taken at the  
graduate level.

## Post-baccalaureate Certificate in Teaching Program (Secondary)

The Post-baccalaureate Certificate in Teaching Program is designed for students who previously have earned bachelor's degrees in fields other than education, who wish to become teachers in secondary schools in one or more subjects and for whom a master's degree is not a priority (applicants already may have earned a master's degree or wish to earn a master's degree in a specialized area of education later). Applicants must have a major or its equivalent in the subject they wish to teach.

Students are required to complete a minimum of 24 hours beyond the bachelor's level, including the courses listed below. Equivalent courses taken within the past five years may transfer; however, a minimum of 24 credit hours, including clinical experiences, must be taken at VCU after admission to the program.

Persons completing the program are expected, among other attributes, to have an understanding of human development and learning theory appropriate to the age group they will teach, to demonstrate knowledge of the subjects they will teach, to develop an understanding of purposes for education and a defensible philosophical approach toward teaching, to acquire awareness of the diversity of the school-age population in cultural background and styles of learning, to demonstrate an ability to plan and implement effective teaching, and to measure student learning in ways that lead to sustained development and learning.

## Secondary education, 6-12

### Qualifying courses credits 6

EDUS 300 Foundations of Education  
TEDU 310 Practicum (three credits)

### Foundation courses 6

EDUS 602 Adolescent Growth and Development or  
EDUS 607/PSYC 607 Advanced Educational Psychology  
EDUS 673 Seminar on Education Issues, Ethics and  
Policy

### Concentration courses 9

TEDU 537 Secondary School Curriculum  
Choose discipline for which certification sought  
TEDU 540 Teaching Middle and High School  
Sciences  
TEDU 543 Teaching Secondary School Foreign  
Languages  
TEDU 545 Teaching Secondary School Mathematics  
TEDU 547 Teaching Secondary School Social  
Studies  
TEDU 548 Teaching Secondary School English  
TEDU 681 Investigation and Trends in Teaching

### Clinical experience 9

TEDU 672 Internship

Total 30

## Post-baccalaureate Certificate for Library/Media Specialist

This certificate program is designed for individuals wishing to gain K-12 endorsement as a library/media specialist in the commonwealth of Virginia.

The School of Education offers two routes for certification as a school library/media specialist. One route is the M.Ed. in curriculum and instruction, with a focus area in school library media. Another route is the post-baccalaureate certificate, which is comprised of course work leading to certification only.

All requirements for admission to graduate school apply to applicants for the post-baccalaureate certificate for library/media specialist. All state department requirements for library/media specialist must be met. Students also must hold a valid Virginia teaching license before entering the program.

Students are required to complete a minimum of 24 graduate hours beyond their current baccalaureate degree, including the required courses listed below.

Persons completing the program are expected to demonstrate:

1. knowledge of current school library program practices; to include the areas of reference materials, cataloging, collection development and management, administration, organization of materials, budget management and materials and hardware purchase,
2. skills in the operation of school based technology; to include computing and telecommunication hardware and software, audio and video hardware and software, and other instructional technologies as appropriate,
3. ability to interpret school and district policy regarding such issues as copyright, fair use, censorship, etc., in accordance with policies adopted by their professional organizations,
4. ability to collaborate with teachers, librarians from all types of libraries, and school administrators to ensure a viable school library program which provides access to information for all children, and
5. the ability to promote reading and literacy of all types.

Required courses	credits
Library	
TEDU 595 Reference and Bibliography	3
TEDU 596 Library Organization and Administration	3
TEDU 597 Cataloging and Classification	3
Technology	
TEDU 507 Survey of Educational Media	3
TEDU 556 Computer Applications in Education	3
Literature	
TEDU 528 Children's Literature II	3
ENED 601 Young Adult Literature	3

Clinical	
TEDU 672 Internship	3
Total	24

## Post-master's Certificate for Reading Specialist

The certificate program is offered for individuals who aspire to become reading specialists. Applicants for the certificate program must hold a master's degree in any specialty area related to education.

The certificate program is designed for students who wish to gain state licensure as a reading specialist in kindergarten through high school settings. Applicants are required to have at least three years of teaching experience in a reading-related field setting if they want to be recommended to the Department of Education for endorsement as a reading specialist in Virginia.

All requirements for admission to graduate school apply to applicants for the post-master's certificate for reading specialist. All state department requirements for reading specialist (specifically the 12 hours of graduate or undergraduate work in selected areas) must be met.

Students are required to earn a minimum of 21 graduate hours beyond their current master's degree, including the required reading courses and an approved reading selective. Advisers will recommend selective courses based upon student experience and goals.

Persons completing the program are expected to demonstrate:

- an understanding of the reading language learning process,
- the ability to critique, adapt and model use of a variety of reading instructional strategies, methods and programs,
- expertise in developing and providing for continuous assessment of an individual and groups,
- ability to implement school-wide developmental, creative and intervention reading/language arts programs, and
- ability to understand and apply theory to practice within a variety of cultural contexts.

Required content courses	credits
TEDU 561 Reading Foundations: Sociological/Psychological Perspectives	3
TEDU 562 Reading Instruction in the Content Areas	3
READ 600 Analysis and Correction of Reading Problems	3
READ 605 Organizing and Implementing	

Reading Programs	3
TEDU 672 Internship in Reading	3

## Approved literacy selective (select two of the following)

TEDU 525 Teaching Language Arts	3
TEDU 528/ENGL 528 Children's Literature II	3
TEDU 549 Diagnostic Reading in the Secondary School	3
TEDU 552/ENGL 552 Teaching English as a Second Language	3
READ 602 Teaching Reading to Adults	3
READ 601 Psycholinguistics and the Language Arts Curriculum	3
TEDU 681 Investigations and Trends in Teaching and ENGL 651 Topics in Teaching Composition: Capital Writing Project	6
TEDU 500 Workshops in Education: Topics in Literacy (to be designated)	3

Electives should be used to ensure state regulations for the endorsement are met.

## Added or add-on endorsements Teaching English as a Second Language

This program leads to an added endorsement, meaning an individual must already be licensed to teach in one or more areas of elementary, middle, secondary, special education or be certified in another teaching area.

Foreign language	credits 12 plus
Linguistics (choose two)	6
ENGL/LING 449 Introduction to Linguistics	
ENGL/LING 450 Modern Grammar	
ENGL/LING 451 History of the English Language	
ENGL/LING 452 Language and Gender	
ENGL/LING 453 Studies in Linguistics	
ENGL/LING 454 Cross-cultural Communication	
Applied Linguistics	3
ENED/ENGL 532 Applied Linguistics	
SPAN/LANG 316 Spanish Linguistics	
Teaching	6
ENGL/TEDU 552 Teaching English as a Second Language	
Choose one from:	
TEDU 562 Teaching Reading in the Content Areas	
TEDU 561 Reading Foundations	
READ 602 Teaching Reading to Adults	

## Add-on endorsements in grades 6 through 12, science

Add-on endorsements in science are available in biology, chemistry, earth science and physics. Each add-on requires a first endorsement in one science and at least 18 semester hours in the add-on science that includes preparation in specified

areas. The earth science added endorsement is listed below. For information about the added endorsements in biology, chemistry or physics, contact the Division of Teacher Education.

#### Earth Science

To add an earth science endorsement to an endorsement in another science discipline, the individual must earn at least 18 semester hours in the earth sciences, including preparation in geology, oceanography, meteorology and astronomy. Courses to meet these requirements include:

GEOG/ENVS 105 and 105L Physical Geology  
GEOG/ENVS 335 and 335L Environmental Geology  
GEOG/ENVS 411 Oceanography  
GEOG/ENVS 401 Meteorology and Climatology  
PHYS 103 Astronomy

Elective courses to complete at least 18 hours include: GEOG 203 and 204 Physical Geography and PHYS 391 Fieldwork and Special Topics.

### Ph.D. in Education Program

#### Michael D. Davis

Program Director

#### Nancy A. Berger

Track Coordinator, Adult Education and Human Resource Development

#### John T. Seyfarth

Track Coordinator, Educational Leadership

#### John Kregel

Track Coordinator, Urban Services Leadership

#### James H. McMillan

Track Coordinator, Research and Evaluation

#### Doris White

Track Coordinator, Instructional Leadership

The Ph.D. in Education Program is interdisciplinary in curriculum, design and management and serves a variety of special audiences. The program is organized into the following tracks.

**Adult education and human resource development track.** Designed primarily for personnel who will be responsible for the design and management of adult education and training functions in environments such as business and industry, county, state and federal agencies, and volunteer organizations. Emphasis is placed on leadership training for planning, developing, managing and evaluating training in adult and continuing education programs. The program of studies is highly individualized and is based on the student's professional goals, previous graduate courses and work experiences.

**Educational leadership track.** Designed primarily for line administrative personnel in public school units. Emphasis is placed on providing leadership training for superintendents, building principals and assistant principals.

**Instructional leadership track.** Designed primarily for staff administrative personnel in urban school units. Emphasis is placed on providing leadership training for curriculum specialty coordinators and elementary, secondary and post-secondary school department heads and supervisors.

**Research and evaluation track.** Designed primarily for individuals with responsibility for conducting research and evaluation projects in and for agencies and educational organizations, emphasis in this track is placed on developing proficiency in both quantitative and qualitative methods of inquiry, providing students with a breadth of methods to study varied educational and social research questions. Students may select a concentration in either research or evaluation.

**Special education and disability leadership track.** Designed primarily for individuals employed in leadership positions in the field of special education, emphasis in this track is placed on developing in-depth knowledge about topics as they pertain to personnel development, research, issues and policies in special education.

**Urban services leadership track.** Designed primarily for persons employed in leadership positions in the urban community requiring less traditionally delineated academic preparation, emphasis in this track is placed on providing leadership training for administrators of community agencies and community organizations.

### Admission requirements

Applicants must have earned a master's degree in an appropriate profession or discipline related to a specific curriculum track in this program. Preference will be given to applicants who occupy positions of organizational leadership and have responsibility (or demonstrate potential) for planning, administering, conducting and evaluating service programs.

The entrance requirements, described in the Admission Packet and Entrance Requirements section to follow, reflect the aims of the program to provide continued academic growth for practitioners. The entrance requirements consist of a series of indicators which serve to predict an applicant's potential for successfully completing doctoral work. No indicator stands alone, and the program takes

into account many facets beyond those traditionally considered. The program's philosophy is one of seeking excellence through an admission process which realizes that many applicants are practicing professionals whose experience and achievements must be recognized.

Admission is highly competitive. Preference is given to qualified applicants who demonstrate serious purpose, scholastic excellence, superior preparation and appropriate experience for the program.

### Application process

Admission decisions rest with a faculty admissions committee and are made only on the basis of a complete application packet. There is one admission period each year. To begin course work in the summer session or fall semester, the application packet must be completed by Jan. 15. It is possible to delay enrollment, but application packets will be reviewed only during the March admission period.

The Admissions Committee reviews all completed admission packets. After the initial review of the packets, applicants are interviewed by the appropriate faculty. Applicants also must provide a writing sample on a date scheduled by the Admissions Committee. After the interviews and writing samples are completed and evaluated, all applicants are notified by mail of the admissions decision. An applicant usually will have attained a cumulative GPA of at least 3.4 on all graduate work attempted and above average scores on the Aptitude Section of the GRE. However, no one variable automatically determines an admission decision.

### Admission packet and entrance requirements

Applicants for admission to the program must complete an admission packet, which includes the VCU Application for Graduate Study as well as supplementary essay materials. Admission packets are available from:

School of Graduate Studies  
Virginia Commonwealth University  
901 W. Franklin St., Room B-1  
Richmond, VA 23284-3051  
(804) 828-6916

Office of Graduate Studies in Education  
Virginia Commonwealth University  
P.O. Box 842020  
Richmond, VA 23284-2020  
(804) 828-6530

The entrance requirements fall into the three following categories:

#### **Academic criteria**

- A completed VCU School of Graduate Studies Application form.
- Two official and up-to-date copies of all transcripts of the applicant's undergraduate and graduate record indicating that the applicant has earned a master's degree from an accredited college or university.
- Official and current scores (within the past five years) for the General Test of the GRE. Advanced test scores are not required but may be submitted. If applicants have taken the GRE more than five years prior to the year of expected admission, they must retake the examination. Older scores also may be submitted. The Admissions Committee will consider the time elapsed since last formal schooling, occupational success and leadership ability.

#### **External criteria**

- A professional resume indicating an applicant's educational and career experience as well as evidence of leadership potential. This experience may come from professional, civic, religious, fraternal or advocacy organizations. The applicant must present evidence of sustained experience in planning, leading, administering or evaluating programs and personnel in varied positions that are related directly to a program track. The evidence might include dates of positions, job responsibilities, supervisor's evaluations, publications and important knowledge that came from the position. Other appropriate evidence may include letters of recognition, awards and professional memberships.
- Completed forms from three references. The applicant must submit names, addresses and telephone numbers of three persons qualified and willing to rate the applicant's intellectual and leadership ability. If the applicant has attended school within the last three years, at least one of the references should be academic. Each of these persons completes a form rating the applicant in a number of personal and academic areas. Submission of these names constitutes permission to contact these persons by telephone anytime during the admission decision process.

In addition to these three names, the applicant should submit the name, address and telephone number of his or her current job supervisor. This person may be contacted by a representative of the Admissions Committee and informed of the full scope and requirements of the doctoral program. The supervisor is expected to support the applicant's educational goals and be willing to provide released time for externship and other program-related activities.

#### **Self-expression**

The applicant is required to submit three written statements:

- Personal statement in which the applicant discusses his or her personal career goals and the manner in which this doctoral program enhances these goals, as well as what the applicant expects to contribute to the program.
- Educational goals statement in which the applicant states his or her educational goals and the manner

in which this doctoral program will help the applicant achieve these goals.

- Work experience statement in which the applicant discusses his or her work experience, and previous and current leadership roles.

The applicant should treat these statements as a summary of goals and talents which go beyond and do not duplicate the other submitted materials.

The applicant is encouraged to check, in advance of the deadline date, the status of his or her application packet to ensure that all components are in the packet by the deadline. Inquiries should be made to the Office of Graduate Studies in Education. Incomplete packets will not be reviewed by the Admissions Committee.

#### **Delayed admission**

Anyone admitted for a particular year may request a delay of one year for entrance to the program. Normally this request will be granted. Individuals requiring a further delay will be required to reapply for admission. The request for delayed admission must be transmitted in writing to the director of the Office of Graduate Studies in Education and must state the reasons for the request and the date that the individual plans to begin the program.

#### **Transfer credit**

Ph.D. in Education Program students may transfer up to nine credit hours into the program, including courses taken at VCU prior to being admitted to the program. Note that credits earned for one degree cannot be applied to another degree. The rules for transferring credit to this program are:

- Transfer credit requests will be considered only after the student has been awarded Continuing Doctoral Status.
- There are no substitutes for the foundation courses, externship or dissertation.
- Each request for transfer credit must stipulate the program component to which it applies with attendant reasoning. Requests for transfer and substitution for a specific research or concentration course must include course syllabus, reading list, instructor's name and any other pertinent material. Each request for transfer credit must be approved by the director of graduate studies in education and must be judged appropriate for the development of the student's concentration or cognate area.
- To be valid for application to the program, transfer credit must have been taken no more than seven years prior to completion of all program requirements for awarding the degree, including successful defense of the dissertation.

Students wishing exceptions to these transfer rules must petition the director of graduate studies in education through their advisers. Their recommendations may be reviewed by the Ph.D. in Education Policy Board for final action.

See the Graduate Studies at VCU chapter of this bulletin for further policies governing transfer credit.

#### **Curriculum**

There are six components of the program leading to the doctor of philosophy in education:

- **Foundations component** (nine hours minimum). This component emphasizes theoretical and social issues in urban institutional development and changes that all leaders in urban service institutions must understand and respond to within their leadership positions.
- **Research component** (12 hours minimum). This component emphasizes the prerequisite skills essential to designing, conducting, and interpreting research. It also provides the research, statistical, and computer tools and resources necessary to produce research beneficial to the urban leader. Students are required to demonstrate competency in areas of research methodology and statistics appropriate to doctoral level study prior to enrolling for courses in this component.

An applicant's level of research competence is considered prior to admission. Research related prerequisites and/or corequisites may be established for individuals based on past academic and/or work experience.

- **Concentration component** (15 hours minimum). This component is designed to allow the student to pursue a series of courses that provide a specific focus and serve as the student's primary discipline. These courses are expected to develop the in-depth knowledge and skills in an identifiable area that is congruent with the student's current or projected career field. It is at this point in the program that the student pursues study in one of the following tracks:

- educational leadership
- instructional leadership
- adult education and human resource development
- urban services leadership
- research and evaluation

Students admitted to the adult education and training track without prior

course work in adult education may be required to take one or two prerequisite courses: ADLT 601 The Adult Learner and ADLT 603 Instructional Strategies for Adults.

- **Cognate component** (nine hours minimum). This component is designed to allow the student to pursue, through course work outside the primary discipline, a secondary field of study that complements the student's concentration component.
- **Externship component** (three hours minimum). The semester externship refers to a minimum of 150 hours of on-site work experience designed to enhance the student's program, career goals and professional development. The externship site is outside the setting in which the student is employed currently and ideally in a different, but related, career area in which the student has had no or limited prior work experience. It is expected that the student will develop an appreciation for the network of service delivery systems in the urban setting and acquire additional leadership skills to function more effectively within that network. Externships are developed jointly by the student and the student's adviser and approved by the director of graduate studies. Students may begin the externship experience only after being awarded Continuing Doctoral Status. The required 150 clock hours of the externship may be extended over two consecutive semesters, if appropriate.
- **Dissertation component** (nine hours minimum). This component consists of EDUS 890 Dissertation Seminar, three hours, and EDUS 899 Dissertation Research, six hours. EDUS 890 Dissertation Seminar is designed to aid the student in identifying the resources and refining the skills required to initiate, develop and complete a scholarly prospectus and dissertation. The remaining credit hours of EDUS 899 Dissertation Research are assigned to the scholarly pursuit and completion of the dissertation.
- **Restricted elective** (three hours minimum). To be taken in either the Concentration, Cognate, or Dissertation Component.

<b>Research component</b>	12
STAT/SOCY 608 Statistics for Social Research	
EDUS 710 Educational Research Design	
EDUS 711 Qualitative Methods and Analysis	
Three credit selective	
<b>Concentration component</b>	15
<b>Educational leadership track</b> (recommended sequence)	
TEDU 617 Instructional Models	
ADMS 701 Development and Implementation of Administrative Policies in Education	
ADMS 704 School Business Administration	
ADMS 705 Planning Educational Facilities	
ADMS 707 Advanced Educational Law	
<b>Instructional leadership track</b> (required sequence)	
TEDU 617 Instructional Models	
ADMS 701 Development and Implementation of Administrative Policies in Education	
TEDU 730 Educational Staff Development	
TEDU 731 Instructional Theories and Strategies	
Elective	
<b>Adult education and human resource development track</b>	
(select five of the following courses)	
ADLT 700 Management of Adult Education and Human Resource Development Programs	
ADLT 701 Advanced Program Planning in Adult Education and Human Resource Development	
ADLT 702 Seminar in Adult Learning Theories	
ADLT 703 The Adult Education and Human Resource Development Training Consultant	
ADLT 704 Groups, Teams and Organizational Learning	
ADLT 705 Global Human Resource Development	
<b>Urban services leadership track</b>	
Courses in career-relevant skills within an urban context with approval of adviser.	
<b>Research and evaluation track</b>	
(select five courses from the appropriate concentration)	
Research concentration	
SOCY 623 Causal Analysis	
SOCY 605/PADM 605 Survey Research Methods	
EDUS 651 Topics in Education: Educational Research and Evaluation	
NURS 772 Advanced Qualitative Research Methods	
MGMT 643 Applied Multivariate Methods	
PPAD 721 Survey of Applied Research Methods in Public Policy and Administration	
PPAD 711 Seminar in Public Policy and Administration I	
Evaluation concentration	
EDUS 661 Educational Evaluation: Models and Designs	
EDUS 662 Educational Measurement and Evaluation	
EDUS 651 Topics in Education	
PPAD 627 Workshop in Policy Analysis and Evaluation	
SOCY 605/PADM 605 Survey Research Methods	

<b>Cognate component</b>	9
<b>Educational leadership track</b>	
The cognate and cognate components combined must include at least nine credit hours outside of the School of Education.	
<b>Instructional leadership track</b>	
The cognate component must be developed outside of the School of Education.	
<b>Adult education and human resource development track</b>	
The cognate component must be developed outside of the School of Education.	
<b>Urban services leadership track</b>	
Either the concentration component or the cognate component, but not both, must be developed in the School of Education.	
<b>Research and evaluation track</b>	
Students who choose the research concentration are required to complete an evaluation cognate.	
Students who choose the evaluation concentration must complete a research cognate. The concentration and cognate components combined must include at least nine credit hours outside of the School of Education.	
<b>Externship component</b>	3
<b>Dissertation component</b>	9
EDUS 890 Dissertation Seminar	
EDUS 899 Dissertation Research	
<b>Restricted elective</b>	3
Total	60

## Other Ph.D. in Education Program requirements

**Residency requirement.** Ph.D. in Education students are required to complete a minimum of 12 credit hours each calendar year, commencing with the first semester in which the student enrolls for course work.

**Continuing doctoral status.** At the completion of 15 credit hours (excluding prerequisite courses), Ph.D. in Education students are evaluated for Continuing Doctoral Status by the director of graduate studies in education. To attain Continuing Doctoral Status, the student must have attained a minimum cumulative GPA of 3.3.

**Program planning.** Ph.D. in Education students are required to submit a final plan of program study before the completion of the 27th credit hour of study.

**Comprehensive examination.** Ph.D. in Education students are required to pass a comprehensive examination at the com-

<b>Foundation component</b>	credits
EDUS 701 Urban Education	9
SOCY 650 Theories of Social and Institutional Change	
PHIL 713/PPAD 713 Ethics and Public Policy	
or PHIL 635 Philosophy of the Social Sciences	

pletion of all course work (excluding the dissertation component). The examination is scheduled once each semester over a two-day period.

## **Graduate courses in administration (ADMS)**

### **ADMS 600 Public School Administration**

Semester course; 3 lecture hours. 3 credits. An overview of the theory and practice of public school administration. Emphasis will be placed on the governance of education and leadership roles of school boards, superintendents, principals and supervisors at the elementary and secondary levels. Appropriate field-based experiences relating theory to practice.

### **ADMS 601 Processes of Instructional Leadership**

Semester course; 3 lecture hours. 3 credits. An examination of clinical supervision methods for use by principals and supervisors to facilitate instructional improvement in schools. Emphasis on collection and interpretation of observation and interview data for analysis of teaching problems and development of improvement strategies consistent with current research.

### **ADMS 602 Seminar in Elementary School Administration**

Semester course; 3 lecture hours. 3 credits. Problems and issues in elementary school leadership. Major responsibilities of the elementary school principal. Enrollment limited to specialists in administration.

### **ADMS 603 Seminar in Secondary School Administration**

Semester course; 3 lecture hours. 3 credits. Problems and issues in secondary school leadership. Major responsibilities of the secondary school principal. Enrollment limited to specialists in administration.

### **ADMS 604 Principalship Seminar**

Semester course; 3 lecture hours. 3 credits. Problems and issues in school administration, K-12. A culminating experience designed to provide school administrators with essential understandings, knowledge and skills necessary to maintain and renew a school. Particular emphasis will be placed on planning, vision setting, student and staff affairs, curriculum and instruction and resource allocation.

### **ADMS 605 Organizational Theory, Structure and Culture in Educational Settings**

Semester course; 3 lecture hours. 3 credits. A study of organizational theory, structure, and culture relating to schools. Emphasis on conceptual understandings needed for practical implementation.

### **ADMS 606 Organizational Behavior and Change in Educational Settings**

Semester course; 3 lecture hours. 3 credits. A study of organizational concepts and practices in educational contexts. Emphasis on both conceptual understandings and specific professional skills relating to diagnosis and development.

### **ADMS 607 Principles of Educational Leadership**

Semester course; 3 lecture hours. 3 credits. Develop understandings for school leaders of effective leadership in organizations, personal leadership styles, and modifying leadership styles. Leadership with respect to vision

building, organizational communications, motivating others, and group problem solving will serve as major areas of study. Lecture, individual study, group work and fieldwork will serve as major means of course delivery.

### **ADMS 610 School and Community Relations**

Semester course; 3 lecture hours. 3 credits. New concepts and specific techniques in school-community relations for teachers, involvement in educational planning, involvement in community planning and an examination of evaluative projects for community use. Appropriate field-based experiences relating theory to practice will be included.

### **ADMS 611 School Law**

Semester course; 3 lecture hours. 3 credits. Legal aspects of school administration that include constitutional and statutory provisions and court decisions.

### **ADMS 620 Improving School Programs and Performance**

Semester course; 3 lecture hours. 3 credits. Introduction to principles of administering outcome-based instructional improvement strategies in schools. Applies testing and evaluation techniques to the problem of improving instruction, with an emphasis on identification, selection and measurement of appropriate performance indicators.

### **ADMS 621 Management of School Operations and Support Programs**

Semester course; 3 lecture hours. 3 credits. Developing understanding and practices of the school principal with respect to key elements of managing school operations and support programs. Special attention will be given to goal setting for programs, securing, organizing and managing human, material and financial resources. Attention will be given to cost/time-effective practices and accountability.

### **ADMS 632 Administration and Supervision of Special Education**

Semester course; 3 lecture hours. 3 credits. Examines practices and problems in providing school programs for individuals with disabilities and gifted students.

### **ADMS 640 Public School Finance**

Semester course; 3 lecture hours. 3 credits. A study of theories, policies, and expenditures of school funds. Special attention will be given to the practice of educational finance within the public school structure. The course will include such topics as the school budget, financial accounting, purchasing and supply problems, school equipment and school insurance.

### **ADMS 641 School Personnel Administration**

Semester course; 3 lecture hours. 3 credits. A study of the personnel function in educational organizations. Designed to explore techniques and problems of staff-personnel relationships in contemporary education.

### **ADMS 642 Organization and Administration of Guidance Services**

Semester course; 3 lecture hours. 3 credits. A study of organizational principles and procedures necessary for the effective administration of guidance services. Consideration is given to procedures used in establishing guidance programs or modifying existing ones (or both), including the study of various community resources that can contribute to more efficient guidance services.

### **ADMS 643 The Community School**

Semester course; 3 lecture hours. 3 credits. The development and utilization of the community school concept will be examined. Community-wide use of school facilities and the involvement of the total community in the learning process will be studied. Emphasis will be placed on the physical plant design, organizational structure, staffing and curriculum of the community school. The utilization of the community school to implement "lifelong learning" will be stressed.

### **ADMS 701 Development and Implementation of Administrative Policies in Education**

Semester course; 3 lecture hours. 3 credits. Examines processes involved in developing and implementing educational policy from the perspective of the school administrator. Emphasis is given to the roles of federal and state governments in policy-making with attention to problems encountered in implementing educational policies.

### **ADMS 702 Educational Administration: Contemporary Theory and Practice**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADMS 600 or equivalent. Study of recent developments in administrative theory and the application of these theories to contemporary and future educational issues and problems.

### **ADMS 704 School Business Administration**

Semester course; 3 lecture hours. 3 credits. Study of theories, principles and practices of school business administration as they apply at the school district and school building levels.

### **ADMS 705 Planning Educational Facilities**

Semester course; 3 lecture hours. 3 credits. Study of the theory, principles, criteria, procedures and practices of planning educational facilities and the modernization, maintenance and operation of existing facilities.

### **ADMS 706 Advanced Supervision of Instruction**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADMS 601 or equivalent. Examines the development of the curriculum and management of instruction in schools; particular attention to organizational processes in schools and their relationship to instruction.

### **ADMS 707 Advanced Educational Law**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADMS 611 or equivalent. Study of the legal aspects of curricular decision making; the legal prerogatives and liabilities of school officials; and the legal responsibilities, rights, and liabilities of school personnel, school students and parents of students.

## **Graduate courses in adult education and human resource development (ADLT)**

### **ADLT 600 Adult Education Perspective**

Semester course; 3 lecture hours. 3 credits. Provides a basic perspective on adult education. Presents a survey of the philosophical underpinnings of the field, including schools of thought and associated theorists, roles and functions of adult educators, agencies and organizations that sponsor adult education programs. Examines selected processes and procedures used by adult educators and current issues impacting adult education.

**ADLT 601 The Adult Learner**

Semester course; 3 lecture hours. 3 credits. An examination of the research findings from the applied behavioral sciences that affect adult learning throughout the life span. Emphasis is placed on the intellectual functioning and differential changes with age; the importance of self-image psychology to successful adult learning activities; relevant learning theories and principles that affect adult learning, motivation, adult attitudes and participation patterns will be explored.

**ADLT 602 Adult Program Planning, Management, and Evaluation**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ADLT 601 or permission of instructor. Models of program planning, management and evaluation appropriate for adult programs. Focuses on assessing needs, negotiating program content and logistics, and evaluating program effectiveness in a variety of settings.

**ADLT 603 Learning Strategies for Adults**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ADLT 602 or permission of instructor. Covers a variety of learning strategies and models for adults, including experimental learning, application of learning technologies and approaches to instructional design.

**ADLT 604 Adult Education Seminar**

Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to those who have completed the other ADLT core courses (600, 601, 602, 603) or are currently enrolled in them. An integrative end-of-program seminar. Course involves students in real problem solving of community based adult education/HRD issues.

**ADLT 605 Learning Technologies for Adults**

Semester course; 3 lecture hours. 3 credits. Offered: Fall semester. Surveys current and future mediated learning technologies employed by corporate and public HRD and training organizations to design, deliver and evaluate learning for adults. Topics will include: online mediated learning modules; technology products employed domestically and globally; basic decision-making strategies used in choosing technology-enabled learning solutions; a critique of available instructional technology resources; critique of the multicultural implications for using mediated learning technologies domestically and globally.

**ADLT 620 Human Resource Development Overview**

Semester course; 3 lecture hours. 3 credits. Provides an overview of the HRD field, to include theories, practices and emerging concepts. Emphasis is on roles, functions and responsibilities of the HRD practitioner in supporting the strategies, mission and goals of the enterprise, whether public, private or nonprofit.

**ADLT 621 Skills Development for Human Resource Development**

Semester course; 3 lecture hours. 3 credits. Develops skills and understandings critical to success as an HRD practitioner. Exposes students to techniques of instruction and survey instruments to gauge organizational climate and learning style differences. Emphasizes practical experience and issue analysis in gaining HRD skills that can be immediately employed.

**ADLT 622 Human Resource Development Strategies and Interventions**

Semester course; 3 lecture hours. 3 credits. Examines organizational development, nature of interventions, when to use them (and not use them), and a variety of models for aligning human resources capabilities with organizational needs. Focuses on introduction of change and transformation of organizational culture.

**ADLT 631/EDUS 631 American College and University**

3 credits. Examines historical and contemporary foundations of American higher education through the study of leading developments and of contemporary issues relating to the curriculum, aims and objectives and current directions of American colleges, universities and other institutional settings of higher education.

**ADLT 632/EDUS 632 The Changing Face of Higher Education**

3 credits. Examines how higher education is changing and explores the reasons for these changes, studies how the academy is responding to social pressures and explores scenarios for future change.

**ADLT 633/EDUS 633 Academic Leadership in Higher Education**

3 credits. Analyzes how leadership in higher education is similar to and different from leadership in other organizational settings, explores challenges for leadership (such as access, cost and social responsiveness) and examines emerging leadership roles at various levels of the academic organization.

**ADLT 701 Advanced Program Planning in Adult Education and Human Resource Development**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ADLT 602 Adult Program Planning, Management and Evaluation or permission of the instructor. Analyzes current approaches to program planning in adult education and human resource development. Explores specific aspects of program planning, including needs analysis, managing large-scale program operations and interorganizational relationships.

**ADLT 702 Seminar in Adult Learning Theories**

Semester course; 3 lecture hours. 3 credits. Provides an opportunity to examine adult learning theories from a variety of epistemologies. Course is cross-disciplinary in scope, capitalizes on a wide research base, and features interaction between students and lead theorists.

**ADLT 703 The Adult Education and Human Resource Development Consultant**

Semester course; 3 lecture hours. 3 credits. Appropriate prerequisites required or permission of the instructor. Emphasizes the roles, responsibilities and skills of internal and external consultants working with adult education and/or human resource development organizations. Analyzes change, intervention and stabilization processes, the roles and functions of consultants, phases of the consulting process, adoption and diffusion of consultant innovations and diagnostic skills of consultants. Critiques current consultant intervention models and strategies.

**ADLT 704 Groups, Teams and Organizational Learning**

Semester course; 3 lecture hours. 3 credits. A critical analysis and evaluation of how human resource development draws on group dynamics, team related methodologies and organizational learning to create learning

environments, analyze problems, build organizational capabilities and refine group processes.

**ADLT 705 Global Human Resource Development**

Semester course; 3 lecture hours. 3 credits. Provides an in-depth awareness of how HRD practices must be modified when dealing with a global workforce. Probes a variety of multicultural dimensions in elevating cultural awareness and sensitivity. Emphasizes building effective HRD programs in cross-cultural contexts.

**Graduate courses in counselor education (CLED)****CLED 600 Introduction to Guidance**

Semester course; 3 lecture hours. 3 credits. An introductory course for all students in counselor education. The course is designed for both elementary and secondary counselors and is a prerequisite to all other courses offered by the department of counselor education. It includes a survey of pupil personnel services and places special emphasis on those services associated with the guidance program.

**CLED 601 Theories of Counseling**

Semester course; 3 lecture hours. 3 credits. The theories upon which counseling is based will be presented, with particular attention placed on the research underlying the theories. The primary focus will be on providing students with a theoretical foundation upon which to base their counseling techniques.

**CLED 602 Practicum: Techniques of Counseling**

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLED 600 and CLED 601 or permission of instructor. A study and application of a variety of counseling techniques employed in the counseling relationship. Emphasis will be placed on counseling skill development.

**CLED 603 Group Procedures in Counseling**

Semester course; 3 lecture hours. 3 credits. Introduction to the group process, group counseling and group guidance contrasted and defined; basically theoretical.

**CLED 604 Practicum: Group Procedures in Counseling**

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLED 601 and CLED 603. Utilization of small-group interaction as a vehicle to explore techniques and procedures common to human relations study. Focus on the teaching of interpersonal effectiveness, behavior objective identification, and developing of experiences relevant to leadership, communication skills, decision making and development in affective or humanistic education.

**CLED 605 Career Information and Exploration**

Semester course; 3 lecture hours. 3 credits. Designed to provide the potential counselor with an understanding of theoretical approaches to career development grades K-adult. Emphasis will be given to the relationship between counselor and student(s) in the career exploration and decision making process. A review of occupational, educational and personal/social information resources will be made.

**CLED 606 Assessment Techniques for Counselors**

Semester course; 3 lecture hours. 3 credits. An examination of individual and group tests will be made. Particular attention will be given to tests of intelligence, aptitude, achievement, interest and personality.

Emphasis will be placed on the importance of careful selection, appropriate administration, skilled interpretation and effective use of assessment instruments used by counselors.

**CLED 610 Guidance in Elementary and Middle Schools**

Semester course; 3 lecture hours. 3 credits. An intensive study of guidance and counseling programs for children and young adolescents. Emphasizes the role of elementary and middle school counselors in developmental guidance. Methods for individual and group counseling and classroom guidance will be discussed and practiced.

**CLED 620 Student Personnel Services in Higher Education**

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLED 601. A course that focuses attention on administration, decision making and problem solving in the area of student personnel services. Emphasizes the case study approach; students will participate in various administrative experiments requiring the employment of administrative theory and practice.

**CLED 621 Secondary School Guidance Seminar**

Semester course; 3 lecture hours. 3 credits. An advanced course designed to provide a means for intensive study of secondary school guidance. The approach will be to integrate the knowledge and skills from various disciplines as they relate to the work of the secondary school counselor.

**Graduate courses in early childhood special education (ECSE)**

**ECSE 601 Assessment of Infants and Young Children with Disabilities**

Semester course; 3 lecture hours. 3 credits. Provides knowledge and practical applications for the identification, placement and assessment for program planning and evaluation of children with disabilities ages birth through five.

**ECSE 602 Instructional Programming for Infants and Young Children with Disabilities**

Semester course; 3 lecture hours. 3 credits. Advanced study of intervention strategies for infants and pre-school-aged children with disabilities. Emphasis on program planning, curriculum, classroom management, developmentally appropriate practice and effective intervention strategies.

**ECSE 603 Program Management, Collaboration and Service Coordination in Early Childhood Special Education**

Semester course; 3 lecture hours. 3 credits. Examines provisions of state and federal laws applicable to service delivery systems for infants and young children with disabilities and their families. Emphasis on service delivery models, family participation options, resource coordination and collaboration, staffing and program evaluation procedures.

**Graduate courses in educational studies (EDUS)**

**EDUS 500 Workshop in Education**

Semester course; 1-3 credits. Repeatable to six credits. Designed to focus on a single topic within a curriculum area, the workshop offers graduate students exposure to new information strategies and materials in the context of a flexible instructional framework. Activities emphasize a hands-on approach with direct application to the educational setting.

**EDUS 514 Parent-child Relations**

Semester course; 3 lecture hours. 3 credits. A methods course in parent-child communications and problem solving. Designed to enable parents and professionals to understand and relate more effectively with children.

**EDUS 594 Topical Seminar**

Semester course; variable; 1-3 credits. May be repeated for a maximum of six credits. A seminar intended for group study by students interested in examining topics, issues or problems related to teaching and learning.

**EDUS 601 Philosophy of Education**

Semester course; 3 lecture hours. 3 credits. A study of basic philosophies that have contributed to the present-day educational system. Attention will be given to contemporary philosophies and their impact on educational aims and methods.

**EDUS 602 Adolescent Growth and Development**

Semester course; 3 lecture hours. 3 credits. Contemporary learning theories and their implications for teaching the adolescent learner. Emphasis will be placed on specific problems of adolescent growth and development as they relate to the learning situation.

**EDUS 603 Seminar in Child Growth and Development**

Semester course; 3 lecture hours. 3 credits. Intensive study of child growth and development and application of this knowledge. Emphasis on current research.

**EDUS 604 Adult Development**

Semester course; 3 lecture hours. 3 credits. An introductory study of adult development from the life cycle perspective with implications for educators working with adults. Emphasis will be placed on major physiological, psychological, sociological, and anthropological factors that make adults distinct from earlier developmental levels.

**EDUS 605 Child and Adolescent Development**

Semester course; 3 lecture hours. 3 credits. Examines theory and practical applications of the research about the cognitive, social and physical development of children and adolescents. Emphasizes issues that affect students in school environments.

**EDUS 606 Review of Research**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of nine credits. Application of research findings to a specific educational area of study. Emphasis is on the consumption and utilization of research findings rather than the production of research evidence.

**EDUS 607/PSYC 607 Advanced Educational Psychology**

Semester course; 3 lecture hours. 3 credits. Application of the principles of psychology to the teaching-learning process. Discussion will focus on the comprehensive development of individual learning experiences and educational programs from the point of view of the educator and the administrator.

**EDUS 608 History of Western Education**

Semester course; 3 lecture hours. 3 credits. This course will explore the development of educational thought and practice from ancient times to the present, with special attention being given to the major issues confronting American education since its beginning.

**EDUS 609 Learning Theories in Education**

Semester course; 3 lecture hours. 3 credits. A study of general learning theories applicable to education including the concepts and issues related to the teaching-learning process. Instruction and curriculum will be discussed to illustrate psychological principles of learning.

**EDUS 610 Social Foundations of Education**

Semester course; 3 lecture hours. 3 credits. A study of significant social issues involved in the development and operation of schools and other educational institutions and processes.

**EDUS 612 Education and the World's Future**

Semester course; 3 lecture hours. 3 credits. An examination of education as it relates to future changes in other areas: population, energy, transportation, family, etc. The course will consist of readings dealing with educational change as well as a series of modules where students will engage in future exercises, games and projects.

**EDUS 613 Educational Change**

Semester course; 3 lecture hours. 3 credits. Developing the skills for planned program change through the use of systematic inquiry, systems analysis and systems approaches through systems concepts. Provides opportunities for students to develop "mini (classroom) changes" or "macro (school district) changes" through the use of systems.

**EDUS 614 Contemporary Educational Thought**

Semester course; 3 lecture hours. 3 credits. This course will be devoted to a critical examination of educational ideas and programs emanating from contemporary writings on education. Students will be encouraged to develop critical skills of analysis in examining such writings utilizing historical and philosophical perspectives.

**EDUS 631/ADLT 631 American College and University**

3 credits. Examines historical and contemporary foundations of American higher education through the study of leading developments and of contemporary issues relating to the curriculum, aims and objectives and current directions of American colleges, universities and other institutional settings of higher education.

**EDUS 632/ADLT 632 The Changing Face of Higher Education**

3 credits. Examines how higher education is changing and explores the reasons for these changes; studies how the academy is responding to social pressures and explores scenarios for future change.



**EDUS 633/ADLT 633 Academic Leadership in Higher Education**

3 credits. Analyzes how leadership in higher education is similar to and different from leadership in other organizational settings; explores challenges for leadership (such as access, cost and social responsiveness) and examines emerging leadership roles at various levels of the academic organization.

**EDUS 641 Independent Study**

Semester course; 1-6 credits. May be repeated for a maximum of nine credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in education.

**EDUS 651 Topics in Education**

Semester course; 1-3 credits, repeatable for nine credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings or problems in education.

**EDUS 660 Research Methods in Education**

Semester course; 3 lecture hours. 3 credits. Designed to provide an introductory understanding of educational research and evaluation studies. Emphasizes fundamental concepts, procedures and processes appropriate for use in basic, applied and developmental research. Includes developing skills in critical analysis of research studies. Analyzes the assumptions, uses and limitations of different research designs. Explores methodological and ethical issues of educational research. Students either conduct or design a study in their area of educational specialization.

**EDUS 661 Educational Evaluation: Models and Designs**

Semester course; 3 lecture hours. 3 credits. Prerequisite: EDUS 660 or permission of instructor. A comprehensive review of the major evaluation theories and models including their focus, assumptions, designs, methodologies and audiences in educational policy making and program development. Designed for students to gain an understanding of alternative procedures of educational evaluation, an in-depth knowledge of at least one theoretical approach to evaluation and skills in interpretation of evaluation studies for policy and in developing an evaluation design for their area of specialization.

**EDUS 662 Educational Measurement and Evaluation**

Semester course; 3 lecture hours. 3 credits. Provides an understanding of basic concepts of educational measurement and evaluation. Includes development, interpretation and use of norm-referenced and criterion-referenced measures, standardized instruments and qualitative assessments applicable to a wide variety of educational programs and settings. Students study in-depth measurement and/or evaluation procedures in their specialization.

**EDUS 672 Internship**

Semester course; 1-6 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of adviser. Study and integration of theory with practice in clinical or off-campus settings supervised by an approved professional and university faculty. May include seminars, selected readings, projects and other activities designed and evaluated by supervising faculty.

**EDUS 673 Seminar on Educational Issues, Ethics, and Policy**

Semester course; 3 lecture hours. 3 credits. An analysis of the ethical dimensions of educational policies and practices. Examines aspects of selected educational policies and practices, drawn in part from practical issues encountered in clinical settings. Investigates how educational policies and practices reflect ethical values and how those values are grounded.

**EDUS 700 Externship**

Semester course; 1-6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

**EDUS 701 Urban Education**

Semester course; 3 lecture hours. 3 credits. A study of urban education from historical and contemporary perspectives. This course includes study of the educative effect of urban environments; the development of public and private urban educational systems; the influence of social, political, and economic factors on urban educational programs; and the impact of theories, proposals, and practices on alternative futures.

**EDUS 710 Educational Research Design**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate-level statistics course and EDUS 660 or equivalent, or permission of instructor. An examination of research designs and concepts commonly utilized in conducting research in applied educational settings. Fundamental principles of research are extended to cover such topics as quasi-experimental, multivariate and qualitative research design.

**EDUS 711 Qualitative Methods and Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate-level statistics course and EDUS 660 or equivalent, or permission of the instructor. Examines qualitative research designs and inductive analysis, including research traditions, problems formulation in fieldwork, purposeful sampling, interactive data collection strategies, research reliability and validity. An interdisciplinary approach is used. Students conduct a small field study in their specialization.

**EDUS 790 Educational Research Seminar**

Semester course; 3 lecture hours. 3 credits. Provides doctoral students with opportunities to investigate research areas related to their doctoral studies. Students and instructor will critique student conducted literature reviews and preliminary research proposals.

**EDUS 798 Thesis**

Semester course; 1-6 credits. May be repeated for a maximum of six credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.

**EDUS 890 Dissertation Seminar**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of adviser or dissertation chair. Designed to develop and refine the skills applicable to

the preparation of an acceptable draft of a dissertation prospectus.

**EDUS 899 Dissertation Research**

Semester course; variable credit. May be repeated. A minimum of 12 semester hours required. Prerequisite: Successful completion of comprehensive examinations and approval of student's doctoral prospectus. Dissertation work under direction of dissertation committee.

**Graduate courses in emotional disturbance (EMOD)****EMOD 500 Characteristics of Students with Emotional Disturbance**

Semester course; 3 lecture hours. 3 credits. Focuses on the nature of children and youth with behavior disorders and emotional disturbances with emphasis on psychological, biophysical, sociological and ecological factors that relate to their educational needs. Related topics include definitions and classification of disorders, school identification and assessment procedures and intervention approaches.

**EMOD 501 Teaching Students with Emotional Disturbance**

Semester course; 3 lecture hours. 3 credits. Prerequisite: EMOD 500. Provides an in-depth study of instructional strategies and organization of activities for children and youth with behavior disorders and emotional disturbances children including curriculum, media, materials and physical environment. Develops skills to plan and deliver instruction in a variety of educational settings including regular classes, resource rooms, self-contained classes and residential programs.

**EMOD 603 Interactive Strategies in Teaching Students with Special Needs**

Semester course; 3 lecture hours. 3 credits. Strengthens teaching skills in affective education, social skills development and life space interviewing techniques as methods of promoting human interaction skills among students with special needs in schools. Focuses on professional skills in interpersonal relationships, communication, consultation and teamwork.

**Graduate courses in English education (ENED)****ENED 532/ENGL 532 Applied English Linguistics**

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: ENGL 449 or equivalent course in linguistics or permission of instructor. Application of linguistic theories and methods to selected teaching problems, such as teaching English grammar and usage, teaching English as a second or foreign language, or teaching standard English to students who speak different dialects.

**ENED 601/ENGL 601 Young Adult Literature**

Semester course; 3 lecture hours. 3 credits. Examination of literature written for young adults, literature appropriate for young people in middle schools and high schools. Focuses on the content, characteristics and teaching of such literature.

**ENED 636/ENGL 636 Teaching Writing**

Semester course; 3 lecture hours. 3 credits. Examines theories and practices of teaching writing, with emphasis on the connections between theory and practice.

**ENED 643/ENGL 643 Teaching Basic Writing Skills**

Semester course; 3 lecture hours. 3 credits. The emphasis of this course will be on developing the student's ability to teach fundamental writing skills. It will include such topics as diagnosis of writing problems, strategies for correcting problems and methods for evaluating progress.

**Graduate courses in health and movement sciences (HEMS)**

**HEMS 500 Motor Development of Young Children**

Semester course; 3 lecture hours. 3 credits. Explores the development of small children, preschool, kindergarten and first-grade children through physical education. Emphasis will be on the construction of a program of motor development for each of these three groups. The programs will be based on the research findings in such areas as perceptual-motor development, motor learning, educational psychology and others. Those students and teachers in the fields of physical education, special education and elementary education should find this course useful in developing programs of motor development for their students.

**HEMS 505 Contemporary Issues in Health**

Semester course; 3 lecture hours. 3 credits. Focuses on contemporary issues related to lifestyle and health behavior. Emphasizes the factors that influence health and the lifestyle changes that promote and maintain optimal health. Issues may include sexuality, nutrition, chronic and communicable diseases, aging, environmental health, policy, and health care systems.

**HEMS 507 Teaching Health in Schools**

Semester course; 3 lecture hours. 3 credits. Examines health issues, family influences, teenage attitudes and signs of progress in health behavior. School health programs, including remedial, classroom instruction and environmental aspects of school life also are considered.

**HEMS 514 Physical Activity for Special Populations**

Semester course; 3 lecture hours. 3 credits. Provides fundamental information to students at the graduate level on physical activity programming for children with disabilities. Course content focuses on programming techniques and methods that are most effective in meeting the specific physical activity needs of the individual child. Emphasis is on Public Law 94-142 provisions currently affecting physical education programming for special populations; in particular, the development of specially designed physical education programs, individualized education programs and programming in the least restrictive environment.

**HEMS 521 Pathomechanics of Sport Injuries**

Semester course; 3 lecture hours. 3 credits. Addresses musculoskeletal and sports injury mechanisms from a pathomechanical and pathophysiological perspective. Focuses on acute trauma and repetitive stress injuries to the musculoskeletal system. Emphasizes evaluation and diagnostic procedures and the pathophysiology and evaluation of mild head injuries commonly acquired as part of physical activity.

**HEMS 550 Exercise, Nutrition and Weight Management**

Semester course; 3 lecture hours. 3 credits. Provides an in-depth analysis of the scientific principles associated with weight management strategies. Emphasizes the separate and combined effects of exercise, nutrition and behavioral interventions relative to weight loss, weight gain and weight maintenance. Includes life cycle nutrition, childhood obesity, adult obesity and chronic disease, weight management intervention strategies, eating disordered behavior and the female athlete triad.

**HEMS 591/RPSL 591 Topical Seminar**

Semester course; variable; 1-3 credits. May be repeated for a maximum of six credits. A seminar intended for group study by students interested in examining topics, issues or problems related to health, physical education, exercise science, recreation and sport.

**HEMS 600/RPSL 600 Introduction to Research Design in Health, Movement Sciences and Recreation**

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the basic knowledge and methodology of research in health and movement sciences. Develops the ability to critically read and evaluate research, acquire a conceptual understanding of statistics and develop an empirical study related to healthy and diseased populations.

**HEMS 601 Movement Physiology**

Semester course; 3 lecture hours. 3 credits. Investigates the physiological processes in relation to bodily exercises in everyday life and sports activities. Physiological changes in the human organism due to movement. Investigation and application of research to health and movement sciences. Students must design, conduct and write a pilot study.

**HEMS 602/RPSL 602 Statistical Applications in Health, Movement Sciences and Recreation**

Semester course; 3 lecture hours. 3 credits. Presents theory and techniques involved in the analysis and interpretation of data pertinent to research in health, movement science and recreation. Includes statistics applied to data encountered in published health, movement science and recreation research.

**HEMS 603 Applied Fitness and Nutrition for Health and Movement Science Professionals**

Semester course; 3 lecture hours. 3 credits. An in-depth study of applied fitness and nutrition principles and practices. Emphasizes the application of knowledge and fundamental fitness and nutrition principles.

**HEMS 604 Nutrition for Health and Physical Activity**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 350 or equivalent or permission of instructor. Provides an in-depth examination of the basic nutrients and their effects on health, fitness and sport performance. Emphasizes an understanding of the biochemistry of metabolism and knowledge of the current research related to nutrition, health and exercise performance.

**HEMS 605 Psychology of Physical Activity**

Semester course; 3 lecture hours. 3 credits. Examines psychological issues related to exercise and physical activity. Includes individual and group motivation theory and techniques, leadership effectiveness, mental health, mental skills training, injury rehabilitation,

eating disorders, exercise adherence, addiction, over training and use of ergogenic aids. Emphasizes examining current research and applications of psychological principles and knowledge in a physical activity setting.

**HEMS 606 Psychosocial Aspects of Sport and Physical Activity**

Semester course; 3 lecture hours. 3 credits. Examines social and psychological issues in sport and physical activity, with emphasis on socialization and motivation for sport and physical activity; patterns of participation and opportunities related to race, gender and social class; mental skills training for performance enhancement; aggression and violence in sport and society; and the role of sport and physical activity in the educational system. Emphasizes examining current research and applied methods in addressing these issues.

**HEMS 610 Laboratory Techniques in Movement Science**

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: HEMS 601 and HEMS 611. Examines the various procedures related to measurement and experimentation in human performance. Includes examination of instruments designed to assess cardiovascular, musculoskeletal and pulmonary performance, as well as mechanical and rehabilitation performance. Focuses on how the instrumentation can be applied to physical training in healthy and diseased populations as well as treatment and rehabilitation in the sports medicine setting.

**HEMS 611 Biomechanics of Human Motion**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Application of the knowledge and methods of mechanics in the study of the structure and function of the human body as applied to sport, physical activity and rehabilitation. Topics include kinematics, kinetics and methods of biomechanical analysis.

**HEMS 612 Administration and Supervision of Physical Education**

Semester course; 3 lecture hours. 3 credits. Gives guidelines for administrative and supervisory policies and problems in physical education and explores observation techniques, standards for judging instruction, the supervisory conference and cooperative supervision. Emphasis is placed upon the common problems met by administrators and supervisors.

**HEMS 613 General Motor Ability Evaluation**

Semester course; 3 lecture hours. 3 credits. Investigates the theory of the construction of evaluative instruments in physical education with emphasis on a critical examination of existing measurement devices. Emphasis on the use of measurement as a tool for improving physical education programs.

**HEMS 614 Motor Assessment for Special Populations**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HEMS 514 or permission of instructor. Provides the student with basic information regarding motor tests and observational instruments that assess and evaluate special populations. Focuses on the analysis of these tests as to their 1) main components and items purporting to measure these components; 2) administration, i.e., time, administrator's experience, group size, validity and reliability and standardization; and 3) use in establishing and monitoring annual goals and short-term objectives for an individualized education program.

**HEMS 615 Orthopaedics and Therapeutics in Sports Medicine**

Semester course; 3 lecture hours. 3 credits. Provides in-depth exposure to procedures used in orthopaedics and physical medicine. Includes lectures and presentations by physicians, surgeons and other health care personnel. Focuses on linking diagnostic and surgical techniques used in orthopaedics and physical medicine to the rehabilitative treatment plan. Emphasizes the diagnosis and treatment of neuromuscular diseases and adaptive technologies for disabled populations.

**HEMS 620 Motor Learning and Performance**

Semester course; 3 lecture hours. 3 credits. Analysis of early patterns of behavior and the development of physical skills in childhood, adolescence, and adulthood. Consideration of differences in motor proficiency and factors affecting the acquisition of motor skills and concepts of motor learning with reference to the improvement of instructional practices.

**HEMS 621 Sports Medicine**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HEMS 521 or permission of instructor. Designed to give the student knowledge in the advanced principles of prevention and treatment of athletic injuries. The course includes advanced first aid techniques and the more sophisticated means of athletic care and prevention. Students are exposed to such modalities as mechanical therapies, thermal therapy, cryotherapy, hydrotherapy and electrotherapy. One major component of the course deals with therapeutic exercise and its use in the rehabilitation of the injured athlete.

**HEMS 660 Neuromuscular Performance**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HEMS 601 and HEMS 611. Examines the interrelationships between the musculoskeletal and neuromuscular systems. Includes examination of normal and abnormal biomechanics of the musculoskeletal system, biomechanical factors related to human performance, as well as acute and chronic adaptations of the neuromuscular system. Emphasizes how these principles can be applied to physical training in healthy and diseased populations and treatment and rehabilitation in the sports medicine setting.

**HEMS 675 Clinical Exercise Physiology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HEMS 601. Examines theoretical and functional techniques of graded exercise testing for functional and/or diagnostic assessment. Topics include pulmonary, cardiovascular, respiratory and myocardial physiology, and the principles and skills of exercise prescription based on metabolic calculations.

**HEMS 690 Research Seminar in Health and Movement Sciences**

Semester course; 1-3 credits. May be repeated for a maximum of three credits. Provides opportunities for presentation and discussion of current research and topics of interest in health and movement sciences. Presents relevant research for discussion delivered by guest researchers, faculty and students.

**HEMS 691 Topics in Health and Movement Sciences**

Semester course; 1-3 credits, repeatable to nine credits. Check with division head for specific prerequisites. Examines specialized issues, topics, readings or problems in health and movement sciences.

**HEMS 692 Independent Study**

Semester course; 1-3 credits. May be repeated for six credits. Determination of the amount of credit and permission of the instructor and division head must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in health or movement sciences.

**HEMS 695 Externship**

Semester course; 1-6 credits. May be repeated for six credits. Prerequisite: Permission of division head. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies in health and movement sciences. Directed by university faculty in cooperation with clinical on-site supervisors.

**HEMS 797 Directed Research Study**

Semester course; 1-3 credits. May be repeated for a maximum of six credits. A research study of a topic or problem approved by the student's adviser and completed in accordance with division policy regarding the directed research study.

**HEMS 798 Thesis**

Semester course; 1-6 credits. May be repeated for a maximum of six credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.

**Graduate courses in interdisciplinary developmental disabilities studies (IDDS)****IDDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities**

Semester course; 3 lecture hours. 3 credits. Provides information and activities on models of teamwork, group decision making, team process, leadership and communication and how they influence services for persons with disabilities and their families; content/discussion focuses on the roles and functions of individuals from various disciplines (including parents) as team members; includes case studies and simulations of interdisciplinary teamwork in action.

**IDDS 601 Resilience: Models, Research and Applications**

Semester course; 3 lecture hours. 3 credits. Overview of resilience models and research across the life span in diverse populations. Interdisciplinary emphasis on applying this overview to prevention and intervention programs at individual, family, school, community and societal levels.

**IDDS 691 Special Topics in Developmental Disabilities**

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite: Permission of graduate faculty adviser, course faculty coordinator, and director of preservice training at the Virginia Institute for Developmental Disabilities. Explores specific interdisciplinary content and issues in the field of developmental disabilities and examines the practice approaches of multiple disciplines.

**IDDS 692 Directed Study in Developmental Disabilities**

Variable 1-4 credits. Prerequisite: Permission of graduate faculty adviser and director of preservice training at the Virginia Institute for Developmental Disabilities. Provides an independent study in a specific area of interdisciplinary practice in developmental disabilities developed under the supervision of a member of the graduate faculty.

**Graduate courses in learning disabilities (SELD)****SELD 501 Methods of Clinical Teaching**

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 533 and SELD 444 or SELD 600. Specific methodologies for teaching individuals with identified precognitive and cognitive learning disabilities. Includes the use of developmental, remedial and compensatory approaches for instruction in basic skills and accommodation to individual learning styles.

**SELD 530 Language Disabilities: Assessment and Teaching**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor or equivalent. Studies normal oral language development as a basis for understanding students who experience specific or generalized difficulties in learning a first language. Includes diagnostic and instruction strategies with an emphasis on the interrelationships of language content and use.

**SELD 531 Collaborative/Consultation Skills for Working with Families and Professionals**

Semester course; 3 lecture hours. 3 credits. Focuses on the context, processes and content for collaboration and consultation. Students will learn how to be an effective collaborator/special educator working with other professionals and parents.

**SELD 600 Characteristics of Persons with Learning Disabilities**

Semester course; 3 lecture hours. 3 credits. The nature and needs of individuals with learning disabilities, with emphasis upon psychological and behavioral characteristics as related to educational needs.

**SELD 611 Teaching the Adolescent with Learning Disabilities**

Semester course; 3 lecture hours. 3 credits. An advanced course in identifying, diagnosing, and remedial academic learning problems in the adolescent. Explores the organization, selection and implementation of compensatory programs and methods under the impact of cognitive, motivational, curricular, social and vocational factors.

**SELD 620 Advanced Educational Diagnosis of Developmental Processes**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 633 or permission of instructor. Must be taken concurrently with Clinical Experience. An advanced course in the assessment and diagnosis of educationally relevant developmental processes in students with exceptionalities, including perception, cognition, language and socialization. Develops skill in utilization and interpretation for educational purposes.

### **SELD 631 Aural Rehabilitation**

Semester course; 3 lecture hours. 3 credits. A detailed review in techniques for teaching lip reading and auditory training for the hearing-impaired child.

### **SELD 677 Transition and Life Span Issues for Individuals with Learning Disabilities**

Semester course; 3 lecture hours. 3 credits. Explores the literature and research, issues and trends that are relevant to school-age learning disabled population in transition, as well as the life span issues found beyond transition and throughout adulthood. The full range of functioning is addressed in the areas of education, employment, social/emotional functioning and personal and daily living issues.

## **Graduate courses in mental retardation (MNRT)**

### **MNRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. An intensive study of the developmental sequence of language/communication acquisition and intervention strategies for infants; pre-schoolers and individuals with severe language delays or deficits, severe mental retardation, and/or other severe disabilities.

### **MNRT 556 Introduction to Mental Retardation**

Semester course; 3 lecture hours. 3 credits. Initial graduate offering for special education majors concentrating in mental retardation. Includes review and discussion of all ages and levels of individuals with mental retardation. Analysis of major issues in mental retardation such as deinstitutionalization, inclusion in school and community services, client advocacy, family involvement and new techniques in intervention and prevention.

### **MNRT 560 Curriculum Design for Students with Mental Retardation**

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 330 or equivalent, and MNRT 556. Examines issues and strategies required in selecting and developing curriculum for students with mental retardation. Emphasizes three components: the content and skills from resources used in teaching particular topics, instructional design procedures and ways of coordinating and delivering instruction to students with mental retardation.

### **MNRT 602 Assessment and Curriculum Development for Students with Severe Disabilities**

Semester course; 3 lecture hours. 3 credits. Addresses functional assessment strategies, IEP development, and curriculum organization and implementation for students with severe disabilities. Emphasizes educating learners in the least restrictive environment using a transdisciplinary team approach.

### **MNRT 610 Teaching Strategies for Students with Severe Disabilities**

Semester course; 3 lecture hours. 3 credits. This course is designed to provide instruction in teaching methods for individuals with severe behavior, learning or emotional disabilities. Emphasis will be placed on instructional program development, task analysis and methods of precision teaching.

## **Graduate courses in reading (READ)**

### **READ 600 Analysis and Correction of Reading Problems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 561 or 549. An analysis of factors relating to reading difficulty. Diagnostic testing procedures and instructional strategies appropriate for the reading specialist in clinical and classroom settings will be emphasized.

### **READ 601 Psycholinguistics and Language Arts Curriculum**

Semester course; 3 lecture hours. 3 credits. An investigation of the psychological processes involved in language behavior and the relationship of these processes to the teaching of the basic communication skills.

### **READ 602 Teaching Reading to Adults**

Semester course; 3 lecture hours. 3 credits. Examines strategies appropriate for teaching adult readers functioning at levels ranging from beginning to college level. Analyzes basic reading concepts, skills, strategies and adult reading methods and materials. Focuses on adapting teaching techniques for use with adults in various organizational patterns.

### **READ 605 Organizing and Implementing Reading Programs**

3 lecture hours. 3 credits. Prerequisites: TEDU 561, READ 600, TEDU 672 or permission of instructor. Integrates reading theory with program implementation. Analyzes the role of reading specialist as related to program design, assessment, supervision, instruction, and resource responsibilities. Includes specific field-based requirements.

### **READ 691 Topics in Reading**

Semester course; 3 lecture hours. 3 credits. Prerequisites determined by topic. Examines recent trends and topics within the field. Includes review of pertinent research, examination of policy issues and investigation of historical movements. Clinical application is included as appropriate.

## **Graduate courses in recreation parks and sport leadership (RPSL)**

### **RPSL 506 Contemporary Issues in Therapeutic Recreation**

Semester course; 3 lecture hours. 3 credits. Prerequisite: RPSM 371, 472 or equivalent. An examination of contemporary issues affecting the delivery of leisure services and programs to disabled persons. Both the scope and nature of leisure opportunities available to disabled individuals are considered.

### **RPSL 510 Tourism Policy**

Semester course; 3 lecture hours. 3 credits. The examination of tourism policy with emphasis upon components involved in the formulation and implementation of public policy. The course will include an analysis of the legislative programs of regional and national tourism organizations.

### **RPSL 591/HEMS 591 Topical Seminar**

Semester course; variable; 1-3 credits. May be repeated for a maximum of six credits. A seminar intended for group study by students interested in examining topics,

issues or problems related to health, physical education, exercise science, recreation and sport.

### **RPSL 600/HEMS 600 Introduction to Research Design in Health, Movement Sciences and Recreation**

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the basic knowledge and methodology of research in health and movement sciences. Develops the ability to critically read and evaluate research, acquire a conceptual understanding of statistics and develop an empirical study related to healthy and diseased populations.

### **RPSL 601 Conceptual Foundations of Leisure Services**

Semester course; 3 lecture hours. 3 credits. A study of the development of the leisure services and sports movement in the United States. Attention will be given to the historical, philosophical and social bases of leisure services and sports in today's society. Implications for present and future leisure services and sports planning will be emphasized.

### **RPSL 602/HEMS 602 Statistical Applications in Health, Movement Sciences and Recreation**

Semester course; 3 lecture hours. 3 credits. Presents theory and techniques involved in the analysis and interpretation of data pertinent to research in health, movement sciences and recreation. Includes statistics applied to data encountered in published health, movement sciences and recreation research.

### **RPSL 603 Research and Evaluation Processes in Recreation, Parks and Sport Systems**

Semester course; 3 lecture hours. 3 credits. Familiarizes student with the scientific approach to inquiry as applied to the study of the phenomenon of leisure, recreation and sport. Explores basic research terminology, methodology, procedures and concepts with particular reference to the application of empirical investigation to topics of interest to professionals in the field of recreation, parks and sport.

### **RPSL 604 Research Practicum**

Semester course; 3 lecture hours. 3 credits. Prerequisite: RPSL 603. Focuses on conceptualizing and writing a professional paper or the first part of a research study (either RPSL 797 Research Project or RPSL 798 Thesis) on a topic in recreation, parks and sport leadership chosen by the student in consultation with the instructor and adviser. Emphasizes problem identification, literature review and research design.

### **RPSL 605 Program Development in Therapeutic Recreation**

Semester course; 3 lecture hours. 3 credits. This course will provide students with an opportunity to critically examine contemporary models of leisure service programming for disabled persons. Emphasis will be placed upon observation and analysis of medical-clinical custodial, therapeutic community/milieu and educational and training approaches to recreation for persons with disabling conditions.

### **RPSL 606 Directed Readings**

Semester course; 3 credits. Prerequisite: Permission of instructor. Provides student with the opportunity to pursue an independent research project or extensive literature review under the supervision of an instructor. Independent work by student must be preceded by the

instructors review and approval of the proposal. Cannot be used in place of existing courses.

#### **RPSL 607 Field Instruction**

Semester course; 150-360 clock hours. 3 credits. Enrollment only by permission of adviser. Application of theoretical knowledge as a practicing professional in a recreation, parks or sport agency or enterprise. A faculty member and field supervisor assess basic knowledge, attitudes and skills necessary to function as a provider or manager of leisure services or sports system.

#### **RPSL 608 Analysis and Planning for Travel and Tourism**

Semester course; 3 lecture hours. 3 credits. Analysis and planning of travel and tourism resources in the development of an effective comprehensive tourism services delivery system.

#### **RPSL 609 Program Development and Management**

Semester course; 3 lecture hours. 3 credits. Analyzes the individual, political and societal determinants of recreation and sport programming. Covers the factors influencing leisure behavior and the role of the program supervisor in recreational and sport settings. Presents the evaluation of recreation and sport programs and the research functions in recreation programming.

#### **RPSL 610 Organization and Administration of Recreation and Parks Systems**

Semester course; 3 lecture hours. 3 credits. An analysis of administrative theories and patterns of management appropriate to the establishment and operation of community leisure service programs. Special emphasis will be given to organizational planning, goal setting, financial support, program evaluation and the role of the administrator in a leisure service setting.

#### **RPSL 630 Sociology of Sport**

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides a systematic study of human behavior as it occurs in and is influenced by social groups, institutions, organizations and societies. Provides an understanding of sport as a social phenomenon and examines principles that govern social behavior and sport. Identifies the consequences of various social structures and critically examines these consequences based on the student's own ethical and moral positions.

#### **RPSL 631 Contemporary Issues**

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides the opportunity to investigate contemporary issues in sports today. Issues utilized for discussion include ethics and values in sport, athlete's rights and issues, ownership rights and issues, media in sports and media's impact on sports, sports agents, women in sport business, Title IX and gender equality, and the NCAA.

#### **RPSL 632 Sports Business**

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides an in-depth examination of pertinent aspects of business and law as applied to the sports industry. Topics include contract and tort, risk and liability, organization structure and management, budget and business plans, and facility management. Provides the basic principles of business and law necessary for successful entry into sports related careers.

#### **RPSL 633 Sports Marketing**

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides a thorough understanding of the practice of contemporary marketing in sports business. Focuses on the concepts and issues of marketing in relation to target markets at all levels of sport enterprise. Presents the marketing mix and its utilization.

#### **RPSL 634 Coaching and Administration**

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Acquaints the student with principles, techniques and functions related to coaching and administrative fundamentals for any sport. Special emphasis on communication, motivation, organization and team building for success. Provides an understanding and overview of multiple elements that contribute to successful and productive coaching of athletes and managing athletics programs.

#### **RPSL 635 Leadership Models in Sports**

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Acquaints the student with principles, techniques and functions related to management and leadership in all organizations. Focuses on the impact of leadership on organizations and their members. Discusses key ingredients of successful management and visionary leadership.

#### **RPSL 690 Seminar**

Semester course; 3 lecture hours. 3 credits. Restricted to second-semester graduate students who have completed the research methods course. Individual graduate thesis and research topics will be discussed as will topics of current, specialized interest to the recreation, parks or sport fields.

#### **RPSL 691 Topics in Recreation and Sports**

Semester course; 1-3 credits, repeatable to nine credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings or problems in recreation and sports management.

#### **RPSL 692 Independent Study**

Semester course; 1-3 credits. May be repeated for a maximum of nine credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in recreation.

#### **RPSL 695 Externship**

Semester course; 1-6 credits; may be repeated for a total of six credits. Prerequisites: Permission of the fieldwork supervisor or executive director, and completion of 24 graduate credits. Restricted to sport leadership majors. Plan of work designed by the extern with prior approval of the offering program. Off-campus planned experiences for advanced graduate students designed to extend professional competencies in recreation, parks and sport leadership. Directed by university faculty in cooperation with placement site directors.

#### **RPSL 722 Recreation Systems Planning**

Semester course; 3 lecture hours. 3 credits. Not offered regularly. General principles of planning and development of local and regional recreation areas and facilities. Investigation of standards relative to size, location and programs. Review of national and statewide outdoor recreation plans and trends in recreation development. A practical exercise in recreation planning to be completed in the field.

#### **RPSL 797 Research Project**

3 credits with 1 credit extension. Prerequisites: RECR 603 and 604. The research project involves a systematically planned and executed scholarly project utilizing an approved methodology for investigating and reporting on a major issue pertinent to the student's interest in the recreation, parks and tourism fields.

#### **RPSL 798 Thesis**

3 credits with 1 credit extension. Prerequisites: RECR 603 and 604. The master's thesis involves a carefully planned and executed research study under the supervision of an adviser and thesis committee utilizing the traditional standards for thesis writing.

### **Graduate courses in teacher education (TEDU)**

#### **TEDU 400 Independent Study**

Semester course; 1-6 hours. 1-6 credits. Opportunities are provided for supervised research and independent study in selected areas. Designed for advanced students. All work offered on an individual basis with the approval of instructor and departmental chair.

#### **TEDU 494 Topical Seminar in Education**

Semester course; variable; 1-3 credits. May be repeated for a maximum of six credits. A seminar intended for group study by personnel interested in examining topics, issues or problems related to the teaching, learning and development of students.

#### **TEDU 500 Workshop in Education**

Semester course; 1-3 credits. Repeatable to six credits. Designed to focus on a single topic within a curriculum area, the workshop offers graduate students exposure to new information strategies and materials in the context of a flexible instructional framework. Activities emphasize a hands-on approach with direct application to the educational setting.

#### **TEDU 501 Working with the Student Teacher**

1-3 credits. A focus on the role of the cooperating teacher during the student teaching experience. Overview of techniques for working with student teachers and evaluating student teacher performance.

#### **TEDU 503 Guidance for Exceptional Children**

Semester course; 3 lecture hours. 3 credits. An introduction to guidance strategies for assisting exceptional children. Special attention is given to the interrelationships of home, school and community resources.

#### **TEDU 504 Film as a Teaching Resource**

Semester course; 3 lecture hours. 3 credits. Exploring the film as a teaching resource. The course is designed to familiarize the students with thought provoking films. Over 50 films will be presented. Especially helpful for the English teacher will be the exploration of the relationship between film and fiction. The humanities teacher will find a repertory of films on topics relating to historical and social questions useful.

#### **TEDU 507 Survey of Educational Media**

Semester course; 3 lecture hours. 3 credits. Introduces the role of educational media and technology in the instructional process. Emphasizes the systematic design of instruction and the selection, evaluation and utilization of media. Basic production skills and equipment operation are developed within a framework of designing appropriate learning activities.

**TEDU 509 TV in the Classroom**

Semester course; 3 lecture hours. 3-6 credits. Video taped teaching-learning materials for specified learner outcomes will be designed and produced. Educational broadcasting and the use of commercial broadcast programs will be examined.

**TEDU 517 Science Education in the Elementary School**

Semester course; 3 lecture hours. 3 credits. A course designed to renew and/or expand teachers' knowledge and skills in the teaching of science in the classroom and the community. New materials and methodologies will be examined in the light of current trends, research findings and professional recommendations.

**TEDU 521 Teaching Mathematics for Middle Education**

Semester course; 3 lecture hours. 3 credits. Emphasis on current instructional strategies, learning theories and manipulative materials appropriate for teaching mathematics to children. The content focuses on middle grades, but the developmental approach includes some topics from the primary grades.

**TEDU 522 Teaching Mathematics for Elementary Education**

Semester course; 3 lecture hours. 3 credits. Emphasis on current instructional strategies, learning theories and manipulative materials appropriate for teaching mathematics to children. The content focus is on the primary and elementary grades.

**TEDU 523 Implementing and Administering Programs for Young Children**

Semester course; 3 lecture hours. 3 credits. Provides the student with fundamental knowledge and skills in the implementation, supervision and administration of educational programs in schools, centers and homes for infants and young children. A problems approach will be utilized with emphasis on creative management and evaluative processes.

**TEDU 524 Cross Cultural Perspectives in Child Rearing and Early Education**

Semester course; 3 lecture hours. 3 credits. Analysis of the impact of linguistic patterns, child-rearing techniques and socialization processes on the education of young children in various cultural settings.

**TEDU 525 Teaching Language Arts**

Semester course; 3 lecture hours. 3 credits. Teaching techniques and materials for the developmental teaching of communication skills. Students will explore significant research and current literature related to content, organization and instruction in language arts for the elementary and middle schools.

**TEDU 528/ENGL 528 Children's Literature II**

Semester course; 3 lecture hours. 3 credits. A study of classic and current children's books from a variety of literary genre. Magazines and media related reference resources and journals are reviewed. The creative use of literature, its sociocultural functions and its contribution to the development of the oral and written expression of children from nursery to grade eight are explored. A focus on children with special problems is included.

**TEDU 531 Collaborative/Consultation Skills for Working With Families and Professionals**

Semester course; 3 lecture hours. 3 credits. Focuses on the context, processes and content for collaboration and consultation. Students will learn how to be an effective collaborator/special educator working with other professionals and parents.

**TEDU 533 Educational Assessment of Individuals with Exceptionalities**

Semester course; 3 lecture hours. 3 credits. An examination of standardized tests and informational techniques, and their application in educational settings. Skills needed for administration, interpretation and application of such techniques in the development and understanding of individualized educational programs (IEPs) are developed.

**TEDU 534 Photography in Instruction**

Semester course; 3 lecture hours. 3 credits. Skills with cameras, films, papers and other photographic equipment and materials. The use of these materials as tools for teaching and the skills for preparation of instructional resources will be discussed and practiced.

**TEDU 535 Problems of Social Studies Instruction**

Semester course; 3-6 credits. Prerequisite: Permission of instructor and appropriate teaching experience. An in-depth investigation into the nature of and alternatives to problems encountered by students while teaching. Developing and evaluating instructional alternatives will be stressed.

**TEDU 537 Secondary School Curriculum**

Semester course; 3 lecture hours. 3 credits. Studies the background and objectives of the contemporary secondary school; basic issues, current trends and practices in curriculum construction and instructional planning are examined.

**TEDU 538 Orientation to Speech and Language Disorders**

Semester course; 3 lecture hours. 3 credits. An introduction to the history, scope and trends in the field of speech pathology to include terminology, systems of classification and concepts of etiology, diagnosis and therapy.

**TEDU 540 Teaching Middle and High School Sciences**

Semester course; 3 lecture hours. 3 credits. Examines the teaching strategies, materials and objectives of the sciences in middle and high schools. Emphasizes the nature of science in science instruction, teaching of experimental design and translating science education research into teaching practices.

**TEDU 541 Infants and Young Children with Special Needs**

Semester course; 3 lecture hours. 3 credits. An overview of the characteristics of infants and pre-school-aged children at risk for or with disabilities. Examines various disabilities, the rationale for early intervention and available resources.

**TEDU 542 Family/Professional Partnerships**

Semester course; 3 lecture hours. 3 credits. Theory and practice relevant to working with families of children with disabilities. Family-centered services and cultural sensitivity are emphasized. Provides an overview of family processes and reactions to having a

child with a disability, strategies for helping family members support and work with their children, available community resources and legal rights of families and children with disabilities.

**TEDU 543 Teaching Secondary School Foreign Languages**

Semester course; 3 lecture hours. 3 credits. Examines objectives, materials, effective instructional strategies, and assessment procedures in the teaching of modern foreign languages. Focuses on a thorough understanding of current developments in foreign language pedagogy and their application to teaching and listening, speaking, reading, and writing skills. Provides theoretical and practical experiences for planning and implementing effective instruction designed to facilitate student acquisition of communicative proficiencies.

**TEDU 544 Introduction to the Middle School**

Semester course; 3 lecture hours. 3 credits. An examination of the nature and capabilities of the middle school student, the school environment, teacher characteristics, instructional modes, the curriculum and the future of the middle school movement.

**TEDU 545 Teaching Secondary School Mathematics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division mathematical sciences major. Examines materials, resources, innovations, procedures, methods, equipment and learning principles appropriate for decision making related to the teaching of secondary mathematics.

**TEDU 547 Teaching Secondary School Social Studies**

Semester course; 3 lecture hours. 3 credits. Examines demands involved in secondary social studies instruction; preparatory approaches to using academic and professional insights in confronting the demands; formulating and implementing appropriate methodological approaches.

**TEDU 548 Teaching Secondary School English**

Semester course; 3 lecture hours. 3 credits. Studies teaching strategies, materials and objectives for literature, language, and composition; developing and organizing English instruction; applying learning theory; examining evaluation strategies; questioning techniques and classroom management.

**TEDU 549 Diagnostic Reading in the Secondary School**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 561 or 562 or permission of instructor. For prospective and practicing secondary school teachers. Studies diagnostic teaching of reading and techniques to help struggling readers in grades 6 through 12, as well as the role of the secondary reading specialist in reading instruction. Reading levels and selection of appropriate materials are considered. Various techniques and strategies for improving reading are investigated. Emphasis on evaluation of reading progress, differentiation of instruction, reading difficulties, and diagnostic and prescriptive procedures. Course techniques are practiced with students in grades 6 through 12.

**TEDU 550 Teaching Interdisciplinary Language Arts and Social Studies in the Middle School**

Semester course; 3 lecture hours. 3 credits. Describes and applies basic principles of middle school education and early adolescence with attention to the persistence of the academic disciplines and traditional curricular approaches to English and social studies. Offers a rationale for interdisciplinary instruction and proposes solutions to the practical dilemmas that confront interdisciplinary teaching in the middle school. Identifies interdisciplinary themes drawn from history, the social sciences and literature; plans units of instruction around such themes; devises instructional strategies for the teaching of interdisciplinary skills and content.

**TEDU 552/ENGL 552/LING 552 Teaching English as a Second Language**

Semester course; 3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with a variety of instructional/learning strategies. Presents and explores current approaches and methodology, as these relate to linguistic features and pedagogy.

**TEDU 554/CMSC 554 Applications of Computers in the Teaching of Mathematics**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: College calculus course or permission of instructor. Introduction to computers and programming using the language, BASIC. Applications of the computer in algebra, geometry, trigonometry, statistics and calculus.

**TEDU 555 Geography in Social Studies Curriculum**

Semester course; 3 lecture hours. 3 credits. A survey of geographic concepts and processes as a basis for examining curricular projects for and developing instructional approaches to geography as part of the social studies curriculum.

**TEDU 556 Computer Applications in Education**

Semester course; 3 lecture hours. 3 credits. Designed for persons who use, or plan to use, computers in the educational process. Emphasis will be placed on the role of computer technology in education, applications in various educational fields, the selection and evaluation of appropriate software and the design of basic instructional programs.

**TEDU 558 Educating Students with Multiple Disabilities**

Semester course; 3 lecture hours. 3 credits. Examines the educational, social, physical, and health care needs of students who possess both cognitive and physical/sensory disabilities. Focuses on specific strategies for positioning and handling students, assessing skills and developing goals collaboratively. Emphasizes techniques for meeting the needs of students with deaf-blindness and students with special health-care needs.

**TEDU 561 Reading Foundations: Sociological/Psychological Perspectives**

Semester course; 3 lecture hours. 3 credits. The purpose of this course is to provide a basic understanding of the theories, processes, and methodologies of reading instruction. Multidisciplinary, multicultural aspects of reading instruction are stressed. Topics of particular importance to the classroom teacher are emphasized.

**TEDU 562 Reading Instruction in the Content Areas**

Semester course; 3 lecture hours. 3 credits. Prepares teachers to apply skills and methods of reading instruction to content areas in elementary, middle and secondary school curricula. Includes theoretical bases and methodology for incorporating reading skills and strategies within content areas of instruction.

**TEDU 564 Teaching the Gifted**

Semester course; 3 lecture hours. 3 credits. Curriculum development and organization of activities for the gifted at different maturational levels with specific attention given to program content, materials, resources and guidance.

**TEDU 566 Diagnosis and Remediation in Reading**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 426 or permission of instructor. Studies reading problems by focusing on reading diagnosis and correction related to classroom and clinic. Involves evaluating and tutoring individuals with reading difficulties. A supervised practicum is a component.

**TEDU 569 Diagnosis and Remediation in Mathematics**

Semester course; 3 lecture hours. 3 credits. For classroom and resource teachers working with children whose arithmetic achievement is significantly lower than grade-level placement or expectancy level; designed to remediate learning problems in arithmetic at the child's level and to aid teachers in the sequential development of skills and concepts.

**TEDU 573 Introduction to Learning Disabilities**

Semester course; 3 lecture hours. 3 credits. Not for program majors, recertification, or endorsement. An overview of individuals with learning disabilities within the educational setting through readings, discussion, simulations and guided field experiences. Recommended for teachers and other personnel who seek the understanding and skills to cope with learning problems in their own setting.

**TEDU 575 Cross-Cultural Communications**

Semester course; 3 lecture hours. 3 credits. An experimentally oriented seminar for persons preparing for or in careers demanding close working relations with numbers of differing cultural/ethnic backgrounds, primarily white/black. Supported by out-of-class readings and exercises, the class will focus on attitudes, opinions and self-perceptions operative within the seminar and on relating these to race relations problems and change strategies within the larger society.

**TEDU 578 Creative Rhythmic Movement**

Semester course; 3 lecture hours. 3 credits. A study of the importance and place of movement and music in a school program, and the uses of these media in teaching. Emphasis will be placed upon music as an accompaniment for movement and movement as an accompaniment for music. Attention will be given to analysis, improvisation and creativity.

**TEDU 591 Social Studies Education in the Elementary School**

Semester course; 3 lecture hours. 3 credits. A course designed to renew and/or expand the knowledge and skills of the classroom teacher in the teaching of social studies. Curriculum emphasis on the development of

knowledge, skills, values and attitudes will be examined in the light of professional recommendations, current trends and research findings.

**TEDU 594 Topical Seminar**

Semester course; variable; 1-3 credits. May be repeated for a maximum of six credits. A seminar intended for group study by students interested in examining topics, issues or problems related to teaching and learning.

**TEDU 595 Reference and Bibliography**

Semester course; 3 lecture hours. 3 credits. A study and evaluation of basic reference hooks and other bibliographical material most frequently used to answer reference questions in a library, including applications of computer technology.

**TEDU 596 Library Organization and Administration**

Semester course; 3 lecture hours. 3 credits. A study of fundamental methods, routines, and procedures in the acquisition, preparation and circulation of books and other materials for libraries. Special emphasis is on the school library.

**TEDU 597 Cataloging and Classification**

Semester course; 3 lecture hours. 3 credits. A basic course in cataloging and classifying library materials. Practice is given in using classification systems, subject headings, filing rules and the use and adaptation of printed cards and cataloging aids.

**TEDU 598 Media Center Development**

Semester course; 3 lecture hours. 3 credits. The development and operation of a comprehensive library/media center requires a broad range of professional skills. This course will provide library/media professionals with knowledge and practice in the design and evaluation of media facilities and an understanding of the specific administrative supervisory skills needed to operate a comprehensive library/media center.

**TEDU 600 Organizing for Effective Classroom Instruction**

Semester course; 3 lecture hours. 3 credits. For elementary and secondary teachers. Designed to assist teachers in becoming effective classroom organizers. Emphasis on the theory and application of instructional planning, behavior control, classroom environment, instructional materials and teaching models.

**TEDU 605 Theory and Practice of Educating Individuals with Special Needs**

Semester course; 3 lecture hours. 3 credits. Not for certification or endorsement in special education. In-depth study of the past and current philosophies and approaches to serving students with special needs in educational settings. Attends to specific ways school services and classroom practices of general education teaching can assist in meeting these needs in today's schools through mainstreaming and inclusion.

**TEDU 611 Critical Investigations in Mathematics Education**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 522 or permission of instructor. A critical investigation of current and appropriate learning theories, instructional activities, programs and manipulative materials applicable to mathematics

education in the elementary school. This course assumes an overall knowledge of the more prominent techniques and materials used to teach mathematics in elementary and middle schools. Students will undertake in-depth critical studies of alternative curricula, materials and strategies based on experience, learning theory and research findings.

**TEDU 615 Curriculum Development**

Semester course; 3 lecture hours. 3 credits. A basic graduate course in curriculum development. Curriculum decision making is examined in relation to foundation areas, content areas and current educational trends. Various conceptions of curriculum are explored.

**TEDU 617 Instructional Models**

Semester course; 3 credits. An examination of instructional models with a focus on their analysis and adaptation to learning environments and school curriculum.

**TEDU 618 Curriculum Construction**

Semester course; 3-6 lecture hours. 3-6 credits. A study of curriculum problems with special attention given to the organization and preparation of teaching units. The course is individualized to meet student needs and nature of study.

**TEDU 620 Designing Modular Instructional Packages**

Semester course; 3 lecture hours. 3 credits. A study of the theory underlying simulation and instructional packages. Modular instructional packages will be developed with emphasis on their proper use as an instructional strategy.

**TEDU 621 Curriculum Seminar**

Semester course; 3 lecture hours. 3 credits. A study of curriculum theory, research, and practice for advanced students. The seminar is an opportunity for students to integrate previous course work and professional experiences in curriculum.

**TEDU 622 Creative and Cognitive Development**

Semester course; 3 lecture hours. 3 credits. Prerequisite: EDUS 603. Application of theories of creative and cognitive development in teaching.

**TEDU 623 Child Study and Assessment in Early Childhood Education**

Semester course; 3 lecture hours. 3 credits. Investigation and application of methods of observing, recording, and interpreting the behavior of young children. Review of criterion and norm-referenced measures for assessing capacities and needs in early childhood education as a baseline for prescribing/providing appropriate activities.

**TEDU 624 Early Childhood Education Programs and Policies**

Semester course; 3 lecture hours. 3 credits. A study of Early Childhood Education paradigms including historical, federally funded and current center and home-based programs. A review of legislation, state and federal, that has affected ECE program development.

**TEDU 625 Young Child and the Curriculum**

Semester course; 3 lecture hours. 3 credits. Translation of curriculum development principles into appropriate curricular programs for young children. Impact of recent research on these curricula. Consideration of child development as related to planned activities and expected outcomes.

**TEDU 626 Home-school Communication and Collaboration**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 414 or permission of instructor. Studies the rationale, methods, programs and current research of home-school partnerships, preschool through secondary education.

**TEDU 627 Critical Investigations in Social Studies Education**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 591 or permission of instructor. Assuming a knowledge of basic content and techniques in the teaching of social studies in elementary and middle schools, this course conducts a critical examination of various curricula and methodologies from the standpoint of current research, philosophical positions and relevant learning theory.

**TEDU 630 Trends in Special Education**

Semester course; 3 lecture hours. 3 credits. Overview of legislation and case law pertaining to special education, characteristics of individuals with exceptionalities, mainstreaming, inclusion, transition and classroom adaptations for educating these students in least restrictive environment.

**TEDU 631 Behavior Management of Students with Disabilities**

Semester course; 3 lecture hours. 3 credits. An in-depth analysis of theoretical models, research, strategies for managing behavior of students with various disabilities. Emphasis on developing, implementing and evaluating behavior management programs in special education programs.

**TEDU 632 Secondary Programming for Students with Disabilities**

Semester course; 3 lecture hours. 3 credits. Designed to provide knowledge of the special educator's role in preparing students with disabilities for post-secondary educational and vocational environments. Emphasis is placed on designing and modifying high school curricula involving students and their families in transition planning and helping students acquire the services needed to be successful in adult life.

**TEDU 636 Introduction to Supported Employment**

Semester course; 3 lecture hours. 3 credits. This course is an overview of strategies for providing supported employment services to persons with severe disabilities. Emphasis is placed on job and contract development, job placement, job-site training and follow-along. Content is appropriate for use in specialized industrial training, mobile work crews, sheltered enclaves and supported competitive employment.

**TEDU 637 Developing and Implementing Supported Employment Programs**

Semester course; 3 lecture hours. 3 credits. This course focuses on the development of comprehensive supported employment programs at the agency or community level. Course content includes strategies for the management and operation of supported employment programs, procedures for program evaluation and methods for designing and implementing staff development programs.

**TEDU 641 Independent Study**

Semester course; 1-6 credits. May be repeated for a maximum of nine credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration. Cannot be

used in place of existing courses. An individual study of a specialized issue or problem in education.

**TEDU 648 Preparation of Instructional Materials**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 507 or permission of instructor. Development of materials for the classroom with an emphasis on determining medium, designing the message, producing the material and evaluating the effect. The design of these materials will be predicated on the learning modes and instructional styles.

**TEDU 649 Educational Media: Theory and Practice**

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 507 or permission of instructor. An analysis of educational media with emphasis on the use of media in instructional design and development of teaching strategies.

**TEDU 651 Topics in Education**

Semester course; 1-3 credits, repeatable to nine credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings or problems in education.

**TEDU 672 Internship**

Semester course; 1-6 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of adviser. Study and integration of theory with practice in clinical or off-campus settings supervised by an approved professional and university faculty. May include seminars, selected readings, projects and other activities designed and evaluated by supervising faculty.

**TEDU 680 Externship Proposal Seminar**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Enrolled in curriculum and instruction program. Approval of externship goals by faculty specialist. Develops and refines the skills applicable to the preparation of an acceptable draft of an externship proposal.

**TEDU 681 Investigations and Trends in Teaching**

Semester course; 3 credits. May be repeated for a maximum of nine credits. A course designed to familiarize teachers and prospective teachers with recent trends and developments in course content, strategies for organizing learning experiences and in presenting course material in their classrooms. Laboratory experience may be incorporated where appropriate.

**TEDU 682 Curriculum Development in Science Education**

Semester course; 3 lecture hours. 3 credits. A course for science teacher-developed curriculum innovations that emphasize the initiation of formal and informal classroom work on current scientific trends, as well as special class work and laboratory programs.

**TEDU 700 Externship**

Semester course; 1-6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.



**TEDU 705 Seminar on Disability Policy**

Semester course; 3 lecture hours. 3 credits. Discussion and examination of key federal and state issues that affect disability policy and program management. Includes an in-depth examination of IDEA, ADA and the Rehabilitation Act of 1973.

**TEDU 706 Personnel Development in Special Education**

Semester course; 3 lecture hours. 3 credits. Prepares individuals to effectively design, provide and evaluate personnel development programs that prepare professionals to maximize the developmental, educational, emotional and employment outcomes of individuals with disabilities.

**TEDU 707 Critical Issues in Special Education**

Semester course; 3 lecture hours. 3 credits. Discussion and examination of controversial and/or critical issues in special education, as well as current IDEA definitions (learning disabilities, emotional disturbance and mental retardation), referral and assessment methods, and instructional models.

**TEDU 708 Designing, Funding and Conducting Research in Special Education**

Semester course; 3 lecture hours. 3 credits. Provides an overview of the frameworks and major designs within three alternative research methodologies in special education: single-subject design, group design and qualitative methods as used in special education research. Addresses advanced research reviews, funding issues and professional writing aspects.

**TEDU 709 Directed Readings in Special Education**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of nine credits. Analysis and discussion of topics specific to doctoral student's disability interest (e.g., learning disabilities, emotional disturbance, mental retardation, etc.).

**TEDU 730 Educational Staff Development**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing and TEDU 617. This course cannot be used to meet a requirement for endorsement as a supervisor of instruction in Virginia.

Provides educational leaders with the knowledge and skills necessary to design, implement and evaluate staff development programs that focus on instructional improvement. Includes the application of staff development as part of teacher evaluation systems.

**TEDU 731 Instructional Theories and Strategies**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing and TEDU 617. Provides instructional leaders with the knowledge and competence necessary to apply and evaluate instructional strategies that are appropriate for students at all levels of schooling. The focus of the course will be on case studies, applications of principles, use of simulation and practical problem-solving approaches.

**TEDU 798 Thesis**

Semester course; 1-6 credits. May be repeated for a maximum of six credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.



# School of Engineering

## Graduate Programs

The School of Engineering began operation on July 1, 1995 with its first class graduating in May 2000. Computer Science joined the School of Engineering fall semester 2001.

Undergraduate degrees are offered in computer science, biomedical engineering, chemical engineering, electrical and computer engineering and mechanical engineering. The School of Engineering offers a master of science degree in engineering, biomedical engineering and computer science. The doctor of philosophy degree is offered in engineering and in biomedical engineering. The Biomedical Engineering Program also participates in an M.D./Ph.D. Program with the School of Medicine. Students in the School of Engineering's advanced degree programs may access courses via the Commonwealth Graduate Engineering Program (CGEP), which coordinates course offerings through the University of Virginia, Virginia Polytechnic Institute and State University, George Mason University and Old Dominion University (see the Interdisciplinary and Cooperative Graduate Studies chapter of this bulletin for details). The School of Engineering's main offices are located on the Academic Campus of VCU. Biomedical Engineering, established in 1984, is located on the Medical College of Virginia Campus of VCU and has well-established ties to the schools on that campus. Graduate degree programs in the School of Engineering are coordinated through the assistant dean for graduate affairs. For further information on these graduate degree programs, contact the assistant dean for graduate affairs in the School of Engineering at (804) 828-0266.

### Programs

The School of Engineering offers the following graduate degree programs:

M.S. in Computer Science  
M.S. and Ph.D. in Biomedical Engineering  
M.S. and Ph.D. in Engineering

Joint degree

M.D/Ph.D. in Biomedical Engineering in participation with the School of Medicine

Interdisciplinary and Cooperative Studies degree  
M.S. Commonwealth Graduate Engineering Program

Post-baccalaureate certificate  
Computer Science

### Admission requirements

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

The following credentials constitute an application and should be sent to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.

- Application for admission on a form furnished to the applicant on request. A fee paid in the form of a check or money order (payable to VCU) must accompany the application. The fee cannot be returned nor credited toward tuition payment.
- Official transcripts of all undergraduate and graduate work sent directly from college or university registrars to the School of Graduate Studies.
- Letters of recommendation from three present or former teachers or others believed by the applicant to be qualified to evaluate fitness to engage in graduate study for the degree in the field of choice.
- A personal letter from the applicant summarizing motivation, education and aims in pursuing graduate study.
- Verbal, quantitative and analytical portions of the Graduate Record Examination are required for all applicants and are recommended for M.D./Ph.D. applicants. Advanced or subject tests are not required.
- International applicants for whom English is not their native language must meet university admission requirements for performance on the TOEFL (Test of English as a Foreign Language). The current minimum TOEFL score is 550 paper/213 computer-based.

601 W. Main St. • P.O. Box 843068  
Richmond, VA 23284-3068  
(804) 828-0190 • Fax (804) 828-9866  
<http://www.vcu.edu/egrweb>

#### Robert J. Mattauch

Dean and Commonwealth Professor of  
Electrical Engineering  
Ph.D.

#### L. Thomas Overby

Assistant Dean for Graduate Affairs  
Ph.D.

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Acceptance of an applicant is based upon the recommendation of the Admissions Committee with approval of the program chair, and the assistant dean for graduate affairs.

### Registration

In the Biomedical Engineering Program, all new students begin their course of study in the fall semester (August). Spring semester admissions require the recommendation of the graduate program director, approval of the chair and the assistant dean for graduate affairs. Students may begin a course of study in either the fall or spring semesters

for the Engineering and Computer Science Graduate Programs, although a start in the fall semester is preferred. For the Commonwealth Graduate Engineering Program, students may begin a course of study in either the fall or spring semester.

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## Assistantships

A number of full or partial teaching and research assistantships are available in the Engineering, Biomedical Engineering and Computer Science Programs. Assistantships are awarded based on academic performance. Full support assistantships are for a 12-month period and cover tuition, fees and a stipend. A brief description of financial aid based on demonstrated need is detailed in the chapter of this bulletin regarding financial aid. Need-based aid programs include National Direct Student Loan, college work study and institutional loans.

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## Honors

The **Alexander Mallory Clarke Award** for academic excellence is given each spring to the Biomedical Engineering student who is recognized by the faculty for outstanding achievement in the first year of study.

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## The student adviser and the Advisory Committee

The successful completion of the requirements for both the M.S. and Ph.D. degrees in engineering and biomedical engineering includes an original research project, the progress of which is guided by a faculty adviser and monitored by an advisory committee. Students receive guidance and counsel from the graduate program director prior to the appointment of the permanent adviser. The permanent adviser holds the primary responsibility for directing the development of the student in the program and providing the appropriate guidance and counsel essential to the scholarly development of the student. An advisory committee, appointed shortly after the permanent adviser is appointed, serves as both an examining and consultative body. Its function is to assist the development of the student. Committee members hold a special responsibility as a source of counsel for the student. For details, students should contact either the respective graduate program director or the program chair.

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## Graduate degree requirements

- All full-time graduate students are expected to register for a minimum of 12 hours of graduate credits per semester and at least one semester hour during the summer, exclusive of audited courses. This requirement includes research.
- At least half of the credits required in the student's program must be those designated as exclusively for graduate students; that is, those at the 600 level or above.
- Graduate students are required to remain in good academic standing through the course of their degree program. Unsatisfactory student performance includes:
  - The assignment of a grade of "U," "D" or "F" in any course.
  - Failure to maintain a cumulative GPA of 3.0 or greater.
  - Failure to pass the written or oral comprehensive examination.
  - Failure to pass the final examination.

A student whose performance is unsatisfactory must successfully petition the dean of the School of Graduate Studies to continue in the graduate program. Unsatisfactory performance also constitutes grounds for the termination of financial assistance to the student.

- Graduate students may not take the comprehensive examination for the Ph.D. degree if their overall GPA is less than 3.0 or if the GPA for courses within the program is below 3.0. Students may not take the final oral examination for the M.S. or Ph.D. degree if their overall GPA is below 3.0. The student's Advisory Committee is the examining body for the administration of the comprehensive examinations and the final examination.
- In addition to these requirements and those set forth by the university, students must meet the requirements for specific degrees set forth in the School of Engineering program listings.

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## Comprehensive examinations

In order to advance to doctoral candidacy, the student must pass both written and oral comprehensive examinations. The written examination(s) focuses on the

subject matter deemed critical as a foundation in the program, and is largely based on material covered in required course work and its application to theoretical and practical problems. The oral examination, which follows successful completion of the written examination(s), is administered to assess the ability of the student to integrate information and display an appropriate mastery of problem-solving capabilities. Graduate students may not take the comprehensive exam if their overall GPA is less than 3.0. Biomedical Engineering students must also have a GPA of at least 3.0 for biomedical engineering courses in order to take the comprehensive exam. For further details, see the graduate program director or the program chair.

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## Admission to candidacy

Before admission to candidacy for the doctorate, students must have: (1) completed required course work, (2) successfully completed the comprehensive examinations and (3) fulfilled all additional departmental requirements. In the Department of Biomedical Engineering, students must complete all the requirements for the master's degree, including successfully defending a master's thesis, before being admitted into candidacy for the doctoral degree. This last requirement will be waived for those students who: (1) already have a master of science in biomedical engineering or related discipline or (2) have successfully completed two years of medical school in the M.D./Ph.D. Program as described in the School of Medicine chapter of this bulletin. In the Engineering program, a student may seek admission to candidacy for the doctor of philosophy degree without first completing the research and thesis portion of the master of science degree.

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## Dissertation research

The student must conduct a substantial original investigation under the supervision of the permanent adviser and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.

When the dissertation has been completed, copies in accepted form and style are submitted to the members of the Advisory Committee. The committee members decide upon the acceptability of the candidate's dissertation. A favorable unanimous

vote is required to approve the dissertation and all examiners are required to vote.

If the Advisory Committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to all members of the faculty. The final oral examination will be limited to the subject of the candidate's dissertation and related matters. A favorable vote of the candidate's Advisory Committee and no more than one negative vote, shall be required for passing the final oral examination. All committee members must vote. There shall be an announcement of the candidate's name, department and title of dissertation, together with the day, place and hour of the final oral examination at least 10 working days in advance.

## Nondegree-seeking students

Students not admitted to a degree program must obtain permission from the program director and chair before being allowed to register for courses.

## Termination of enrollment

The university reserves the right to terminate the enrollment of any student for unlawful, disorderly or immoral conduct or for persistent failure to fulfill the purposes for which the student was matriculated.

## Biomedical Engineering Program

Abraham, Donald J., Professor and Chair (Medicinal Chemistry)

Ph.D. University of Pittsburgh  
Molecular graphics, X-ray crystallography, drug design.

Baumgarten, Clive M., Professor (Physiology)

Ph.D. Northwestern University  
Properties of excitable membranes, cardiac electrophysiology.

Bowlin, Gary, Associate Professor

Ph.D. University of Akron  
Tissue engineering and electrospinning biopolymers.

Cardea, John A., Professor and Chair (Surgery, Orthopedics)

M.D. West Virginia University  
Biomechanics and surgical procedures of total joint replacement.

Chlebowski, Jan, Professor (Biochemistry and Molecular Biophysics)

Ph.D. Case Western Reserve University  
Structure and function of macromolecules.

Desai, Tushar, Affiliate Assistant Professor

Ph.D. Vanderbilt University  
Cardiophysiology.

Fatouros, Panos, Professor (Radiation Physics)

Ph.D. Ohio State University  
Osphalometric radiography, magnetic resonance imaging.

Fei, Ding-Yu, Associate Professor

Ph.D. Pennsylvania State University  
Medical imaging, biofluid mechanics, ultrasonic tissue characterization.

Genova, James, Affiliate Professor

Ph.D. State University of New York at Stony Brook  
Acoustical signal processing.

Grant, J. Wallace, Associate Professor (Engineering

Sciences and Mechanics, Virginia Polytechnic Institute and State University)  
Ph.D. Tulane University  
Mathematical modeling of biological systems.

Harkins, Stephen W., Professor (Gerontology)

Ph.D. University of North Carolina  
Pain and age, psychophysiology of sensation, perception and cognitive processing.

Hsia, Peng-Wie, Associate Professor

Ph.D. University of Michigan  
Electrophysiology, signal processing.

Kellogg, Glen E., Assistant Professor (Medicinal Chemistry)

Ph.D. University of Arizona  
Molecular graphics and software development.

Kraft, Kenneth, Associate Professor (Radiology)

Ph.D. University of Rochester  
Medical imaging, magnetic resonance imaging.

Lenhardt, Martin L., Professor

Ph.D. Florida State University  
Supersonic bone conduction, auditory neurobiology.

Lum, Peter S., Associate Professor, Biomedical

Engineering  
Ph.D. University of California at Berkeley  
Rehabilitation engineering, medical robotics.

Marmarou, Anthony, Professor (Surgery)

Ph.D. Drexel University  
Modeling of neurological function following cerebral trauma.

Miller, Gerald, Professor and Department Chair

Ph.D. Pennsylvania State University  
Biofluid mechanics, artificial organs, rehabilitation engineering.

Moon, Peter, Associate Professor (Dentistry)

Ph.D. University of Virginia  
Dental bonding and mechanical testing of dental materials, biological reactions of materials.

Ochs, Alfred L., Assistant Professor (Veterans Administration Hospital)

Ph.D. Washington University  
Ocular motion in cerebella disease, visual evoked potentials in multiple sclerosis.

Ornato, Joseph P., Professor (Internal Medicine)

M.D. Boston University  
Computer applications in cardiology and emergency medicine.

Pittman, Roland N., Professor (Physiology)

Ph.D. State University of New York at Stony Brook  
Microcirculation, oxygen delivery.

Rastegar, Sohi, National Science Foundation

Ph.D. University of Texas at Austin  
Biophotonics, medical applications of laser, biomedical optics.

Wayne, Jennifer S., Associate Professor

Ph.D. University of California at San Diego  
Biomechanics of cartilage and other soft tissue, joint biomechanics.

Wetzel, Paul, Associate Professor

Ph.D. University of Illinois, Chicago  
Human-machine interface, eye and head tracking.

Zuelzer, Wilhelm, Associate Professor (Orthopedic Surgery)

M.D. Virginia Commonwealth University  
Biomechanics of knee and ankle joints.

The Biomedical Engineering program offers both the Master of Science and the Doctor of Philosophy degrees. Biomedical Engineering provides in-depth study in a variety of specialization areas including biomedical imaging systems, orthopedic biomechanics, tissue and cellular engineering, biomaterials, artificial organs, human-computer interfaces, cardiovascular devices and rehabilitation engineering. The program allows students to participate in cutting edge research in one of the nation's most advanced engineering programs. Biomedical Engineering has ongoing collaborations with numerous industries, federal laboratories, the VCU science departments, the university's Medical College of Virginia campus, the Hunter Holmes McGuire Veterans Affairs Medical Center, the Virginia Biotechnology Research Park, and numerous biomedical and clinical programs throughout the VCU Health System's MCV Hospitals.

## Admission requirements

In addition to the university admissions requirements, Biomedical Engineering has the following admissions criteria for all entering graduate students (for both M.S. and Ph.D. applicants):

- Minimum grade point average of at least 3.0 during the previous 60 credit hours (for applicants with a B.S.) or for all graduate credit hours (for applicants with an M.S.)
- Minimum GRE score of 1100 (combined verbal and quantitative sections) including a minimum 600 on the quantitative section
- Minimum TOEFL score of 600 paper/250 computer-based for students whose first/native language is not English.

Biomedical Engineering will accept a maximum of 6 credit hours for transfer into either the M.S. or Ph.D. program if the original grades for such courses are "B" or higher (or equivalent).

## M.S. requirements in Biomedical Engineering

Students pursuing an M.S. in Biomedical Engineering must successfully complete a minimum of 28 credit hours exclusive of research credits.

	credits
Required Biomedical Engineering Courses (minimum 3 of the following) Includes BME 507 (Instrumentation) BME 603 (Signal Processing) BME 511 (Biomechanics) BME 613 (Biomaterials)	9
Required Courses in Other Departments Includes Physiology and Statistics	8
Elective Courses (Biomedical Engineering or other area)	9
Research Seminar (Biomedical Engineering)	2
Total credits (minimum)*	28

\* Directed Research (EGRB 697) is required at a level to be determined by each student's advisory committee.

This program is nominally a two-year program leading to the M.S. in Biomedical Engineering. Prior evidence of completion of Physiology and/or Statistics may result in a waiver of the requirements for these courses as determined by the graduate program coordinator and/or the department chair. Each master of science student must successfully complete a thesis describing his or her individualized research project. At the completion of the research, the student must present the research to the advisory committee and undergo an examination of the research results, thesis documentation and underlying educational foundation necessary to have successfully completed the research. Upon successful completion of the examination and thesis, the student may apply for graduation from Virginia Commonwealth University with the Master of Science in Biomedical Engineering.

## Ph.D. requirements in Biomedical Engineering

A minimum of 39 credit hours, exclusive of research credits, is generally required.

Required Biomedical Engineering Courses Includes BME 507 (Instrumentation) BME 603 (Signal Processing) BME 511 (Biomechanics) BME 613 (Biomaterials)	credits 12
Required Courses in Other Departments Includes Physiology and Statistics	8
Elective Courses (Biomedical Engineering or other area)	15
Research Seminar (Biomedical Engineering)	4
Directed Research (Biomedical Engineering)	52
Total credits (minimum)	91

This program is nominally a three-year program leading to the Ph.D. in Biomedical Engineering. Prior evidence of completion of Physiology and/or Statistics may result in a waiver of the requirements for these courses as determined by the graduate program coordinator and/or the department chair. A period of residence of at least three consecutive terms is required. Residency is defined as registration for at least nine credits per term. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited toward the doctor of philosophy degree.

At the conclusion of the first year of doctoral study (or when the core course requirements have been satisfied), each doctoral student must successfully complete written and oral portions of a comprehensive examination. This examination is designed to test the student on fundamental knowledge in engineering as evidenced by the core (and related elective) courses within the curriculum. Upon completion of this examination, a doctoral student is then permitted to initiate a doctoral research project and to complete additional coursework consisting of biomedical engineering, clinical and science electives.

Upon completion of all coursework and the intended research, a doctoral student must prepare a dissertation describing the completed research. A dissertation defense, under the direction of the advisory committee, will be scheduled to examine the student's research, dissertation documentation, and underlying fundamental knowledge needed to complete the research. Upon successful completion of the defense and dissertation, the doctoral student may apply for graduation from Virginia Commonwealth University with the Doctor of Philosophy in Biomedical Engineering.

## M.D./Ph.D. in Biomedical Engineering

The Biomedical Engineering Program also participates in an M.D./Ph.D. Program with the School of Medicine. Interested students should consult the Biomedical Engineering graduate program coordinator or the program chair.

## Graduate courses in Biomedical Engineering (EGRB)

### EGRB 507 Biomedical Electronics and Instrumentation

2 lecture and 2 laboratory hours. 3 credits. Offered: II. Fundamental principles and applications of electronics and instrumentation as related to biomedical sciences.

### EGRB 509 Microcomputer Technology in the Biomedical Sciences

2 lecture and 2 laboratory hours. 3 credits. Offered: I. Microcomputer applications to the acquisition and manipulation of data in the biomedical laboratory.

### EGRB 511 Fundamentals of Biomechanics

3 lecture hours. 3 credits. Prerequisites: Calculus and ordinary differential equations (MATH 200-201, MATH 301 or equivalent). Presents basic mechanical properties of materials, describes methods of material testing and introduces techniques for analyzing the solid and fluid mechanics of the body. Considers topics such as stress/strain relationships, particle mechanics, and force balances.

### EGRB 603 Biomedical Signal Processing

3 lecture hours. 3 credits. Prerequisites: Calculus and differential equations (MATH 301 or equivalent), including Laplace and Fourier Transforms. Explores theory and application of discrete-time signal processing techniques in biomedical data processing. Includes discrete-time signals and systems, the Discrete/Fast Fourier Transforms (DFT/FFT), digital filter design and implementation, and an introduction into processing of discrete-time random signals.

### EGRB 610 Microprocessor Interfacing for Biomedical Instrumentation

2 lecture and 2 laboratory hours. 3 credits. Offered: I. Prerequisite: EGRB 509 or permission of instructor. Principles and applications of microprocessor interfacing for biomedical instrumentation. Topics include microprocessor architecture, assembly language, programming and debugging techniques, EPROM programming and bus structure and interfacing.

### EGRB 611 Cardiovascular Dynamics

3 lecture hours. 3 credits. Offered: I. Pre- or corequisite: PHIS 501 or PHIS 502. Analyzes and models the cardiovascular system in health and disease through studies on the properties of heart and vascular tissue, the mechanics of blood flow and the application of engineering methods to the diagnosis and treatment of cardiovascular pathologies.

### EGRB 612 Structural Biomechanics

3 lecture hours. 3 credits. Prerequisite: EGRB 511. Treats mechanical functions of the human body as an engineering structure used to assist and supplement these functions. Includes movement of the musculoskeletal

system, joint reaction forces, stresses and strains developed within bones, function and design of orthopedic prostheses and braces, effect of vibration and impact on the body, mathematical and other models of the body.

#### **EGRB 613 Biomaterials**

3 lecture hours. 3 credits. Offered: I. Prerequisite: Undergraduate material science or permission of the instructor. Primary and secondary factors determining the performance of materials used for implants in the human body. Topics will include metallurgy of stainless steel, cobalt-chromium alloys, titanium alloys, biocompatibility of implant materials, mechanical and physical properties of biomaterials, corrosion of biomaterials and medical polymers.

#### **EGRB 615 Medical Imaging**

3 lecture hours. 3 credits. Offered: I. Prerequisite: Calculus and college physics. Covers the physical principles and techniques of medical imaging modalities such as ultrasound, X-ray and nuclear magnetic resonance. Includes generation and detection of images, consideration of system design and qualitative image analysis.

#### **EGRB 635 Modeling for Biomedical Engineers**

3 lecture hours. 3 credits. Offered: II. Prerequisite: Permission of instructor. Applies mathematical modeling techniques to biomedical systems. Covers linear and nonlinear systems, deterministic and random systems, large systems, ecosystems, numerical techniques, graph theoretical approaches and simulation packages. Utilizes examples of biochemical, physiological and pharmacokinetic systems throughout.

#### **EGRB 641 Survey of Molecular Modeling Methods**

Semester course; lecture and laboratory hours. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

#### **EGRB 670 Advanced Molecular Modeling Theory and Practice**

Semester course; lecture and laboratory hours. 3 credits. Prerequisite: MEDC 641, EGRB 641 or permission of the instructor. Examines the principles and applications of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

#### **EGRB 680-681 Research Orientation I-II**

4 laboratory hours. 2 credits (nondidactic course) per semester. Research rotation through the biomedical engineering core and selected affiliate laboratories.

#### **EGRB 690 Biomedical Engineering Research Seminar**

1 lecture hour. 1 credit. Offered: I, II. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

#### **EGRB 691 Special Topics in Biomedical Engineering**

1-4 credits. Offered: I, II. Lectures, tutorial studies, library assignments in selected areas of advance study, or specialized laboratory procedures not available in other courses or as part of the research training.

#### **EGRB 697 Directed Research in Biomedical Engineering**

1-15 credits. Offered: I, II, S. Research leading to the M.S. degree or elective research projects for other students.

### **Computer Science Program**

Ames IV, James E., Associate Professor and Chair

Ph.D. Duke University

Medical applications of computer science.

Brilliant, Susan S., Associate Professor

Ph.D. University of Virginia

Software engineering.

Cheng, Chao-Kun, Associate Professor

Ph.D. University of Notre Dame

Programming languages and compilers.

Murrill, Branson W., Associate Professor

Ph.D. College of William and Mary

Software analysis and testing.

Parker, Lorraine M., Associate Professor

Ph.D. University of Wales, Great Britain

Database systems and concurrency.

Primeaux, David, Associate Professor

Ph.D. University of Louvain, Belgium

Artificial neural networks, knowledge base systems, parallel algorithms, ethics.

Resler, Daniel R., Associate Professor

Ph.D. Queen's University, Ireland

Programming languages and compilers.

The master's degree program emphasizes continuing self-development of individuals currently engaged in science, technology and engineering-related fields. It prepares persons who have completed undergraduate majors in these fields for entry into a career in the numerous areas that use computing technology. Both the theoretical and applied aspects of computer science are emphasized in this program. The program offers courses in a wide range of areas in computer science, including artificial intelligence, theory of computation, computer architecture, software engineering, programming languages, database, and computer graphics. These areas correspond to the research interests and specialization of the faculty in the computer science program. A full range of courses is offered both during the day and in the evening for the convenience of students with full time jobs.

### **Admission requirements**

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the School of Engineering, computer science applicants must have a bachelor's degree in computer science or a closely related discipline.

### **Degree requirements**

A student may choose either a thesis or non-thesis degree program. The thesis option is suggested for students who have a strong research interest or those who wish to pursue a Ph.D. degree. Interdisciplinary programs of study that involve computer science and another discipline are encouraged; however, a core of computer science courses is required. Courses not labeled CMSC must show relevance to the student's program of study and must be submitted for approval by the Computer Science Graduate Program Committee through the student's adviser. At most six non-CMSC credits may be applied toward the degree.

### **M.S. requirements in Computer Science**

#### **Thesis option (30 credits):**

- A minimum of 27 non-thesis credits, including at least 12 credits at the 600 level.
- Three credits in CMSC 698 (thesis).

#### **Non-thesis option (33 credits):**

- A minimum of 33 credits, including at least 18 credits at the 600 level.

Courses that are transferred are subject to the following rules. These credits must not have been applied to any other degree; however, they may have been taken as part of a post-baccalaureate certificate program.

- No more than six credits in graduate-level courses taken at VCU before admission to the M.S. program may be counted toward the M.S. degree.
- Up to one-third of a student's non-research graduate-level credits can be transferred into the M.S. program from another college or university.
- The number of credits that may be transferred by students pursuing an M.S. in Computer Science through the Commonwealth Graduate Engineering Program (CGEP) is limited by CGEP policy to 50 percent of the required credits.
- All transfer credits must be approved by the C.S. Graduate Program Committee using the graduate course transfer form.

Students seeking to take a research credit course (CMSC 697 Directed Research; or CMSC 698 Thesis) in a given semester must find a faculty member willing to supervise the research. Before enrolling in the course, the

student must submit a research proposal form to the Computer Science Graduate Program Committee no later than the end of the 10th week of the prior semester. At most three credits of CMSC 697 can be applied toward the degree.

The thesis can be in any area of computer science, or an interdisciplinary area with a strong computer science component. The proposed content will be developed in conjunction with the student's thesis adviser. The thesis may take the form of an in-depth literature search and exposition on some area of computer science, a substantial project or other application that involves a depth of computer science knowledge, original research, or some combination of these forms. The student will produce a written thesis in the format specified by the VCU School of Graduate Studies, and will publicly defend the thesis before a committee consisting of the thesis adviser, at least one other faculty member from the computer science program, and a faculty member from outside of the computer science program.

## Computer science certificate

For the students who hold bachelor's degrees in other areas, the School of Engineering offers the following alternative post-baccalaureate undergraduate certificate in computer science. Students who gain certification through the computer science program are well suited for many professional opportunities available in the scientific community and with government agencies. Further, the certification process is designed to allow interested students to prepare for graduate study in computer science. Students seeking more information or seeking to enter this certificate program should contact the Computer Science Program office.

## Graduate courses in Computer Science (CMSC)

### CMSC 502 Parallel Programming

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 312 and CMSC 401. Software and hardware mechanisms for providing mutual exclusion in uniprocessor and multiprocessor environments. Architectures of multiprocessor systems and metrics for their evaluation. Design and uses of parallel algorithms to solve concurrency problems in a distributed environment including message passing and remote procedure calls. Students will work in teams to design and implement parallel algorithms.

### CMSC 504 Compiler Construction

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and CMSC 403. Review of programming language structures, translation, loading, execution and storage allocation. Compilation of simple expressions and statements. Organization of a compiler. Use of bootstrapping and compiler writing languages.

### CMSC 505 Computer Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 301 with a grade of "C" or better and CMSC 311. Basic digital circuits combinational logic, data transfer and digital arithmetic. Memory and memory access, control functions, CPU organization, microprogramming, input/output interfaces.

### CMSC 506/ENGR 526 Computer Networks and Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 312. Theoretical and applied analysis of basic data communication systems; design of networks in the framework of the OSI reference model; Local and Wide Area Networks; performance analysis of networks; error control and security. Students will work in teams to design and implement a small computer network.

### CMSC 508 Data Base Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 401. Design and implementation of hierarchical, network and relational data base systems. Relational algebra, normal forms and normalization.

### CMSC 509 Artificial Intelligence

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and CMSC 403. Problem spaces, problem-solving methods, game playing, knowledge representatives, expert systems, natural language understanding.

### CMSC 511 Computer Graphics

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and MATH 310. Presents mathematical techniques for picture development and transformation, curve and surface approximation and projections, graphical languages and data structures and their implementation, graphical systems (hardware and software).

### CMSC 519 Software Engineering: Specification and Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 256 and 301, both with a grade of "C" or better, and CMSC 355. Overview of the software engineering process and software life cycle models. Detailed study of planning, analysis, specification and design phases. Students will work in teams to gain experience in prototyping and in developing specification and design documents and user documentation.

### CMSC 520 Software Engineering Practicum

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and 519. Students participate as part of a team in the detailed design, implementation and evaluation of a software system.

### CMSC 521 Introduction to the Theory of Computation

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 301 or the equivalent with a grade of "C" or better. An introduction to automata theory, formal languages and computability. Topics include finite automata, pushdown automata, Turing machines, decidability and computational complexity.

### CMSC 525 Introduction to Software Analysis, Testing, and Verification

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and 403. An introduction to concepts and techniques used in the analysis of software for certain properties. Using analytic results to derive test data and verify the correct implementation of programs. Flow graphs, fault/failure model, theoretical and practical limitations. Control flow, data flow and error flow analyses. Testing strategies including random, structural, mutation and error flow. Software metrics.

### CMSC 526 Theory of Programming Languages

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 403. An introduction to the formal semantics of programming languages, logic programming and functional programming. Topics include denotational semantics, attribute grammars, Backus Normal Form Functional Programming, fixed point semantics, model-theoretic semantics and PROLOG.

### CMSC 591 Topics in Computer Science

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisites may vary. Permission of the instructor required. Course is open to qualified undergraduates. Selected topics in computer sciences such as: Theory of data bases, information retrieval and artificial intelligence.

### CMSC 602 Operating Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 502. A study of operating systems including those in multiprocessor and distributed environments. I/O programming, resource management (including processor and memory management), security and system performance evaluation.

### CMSC 605/ENGR 635 Advanced Computer Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 505 or EGRE 426, or consent of instructor. This course will focus on the design and analysis of high performance computer architectures. Topics investigated include: pipeline design, super-scalar computers, multiprocessors, memory systems, peripherals, interfacing techniques, networks, performance and software issues.

### CMSC 608 Advanced Data Base

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 508. Studies the theory of the logical structure of the relations in a relational data base and the theory of concurrency in a distributed data base system. Functional dependencies, covers for functional dependencies, representation theory, query modification, null value, concurrency and distributed data base systems.

### CMSC 611 Advanced Computer Graphics

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 511. Modeling, representation of three-dimensional (3-D) shapes, displaying depth relationships, algorithms for removing hidden edges and surfaces, color, shading models, and intensity.

### CMSC 619 The Design and Specifications of User Interfaces

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing and permission of instructor. Requires knowledge of first order predicate calculus and context-free languages. Focuses on human-computer interface design principles and methodology and formal specifications of user interfaces.



### CMSC 621 Theory of Computation

Semester course; 3 lecture hours. 3 credits.

Prerequisite: CMSC 521. Discussion of the complexity and computability of problems and programs. Topics will include unsolvability, universal programs and abstract complexity.

### CMSC 625 Advanced Software Analysis, Testing and Verification

Semester course; 3 lecture hours. 3 credits.

Prerequisite: CMSC 525. A study of the concepts and techniques used in the analysis of software and the derivation of test data. Software metrics and reliability. Construction of tools to aid software analysis and testing. Students will review seminal and current papers from the literature, and lead their discussion in class.

### CMSC 691 Special Topics in Computer Science

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisites: At least one graduate-level computer science course pertaining to the topic area, and permission of instructor. Selected topics in computer science from such areas as data base management, communications, advanced computer architecture, analysis of algorithms, program correctness, computational complexity.

### CMSC 697 Directed Research

Semester course; 3 lecture hours. 3 credits.

Independent research done under the supervision of a faculty member. The student must identify a faculty member willing to supervise the research and submit a proposal for approval by the computer science graduate committee no later than the 10th week of the prior semester. A written report and an oral presentation are required upon completion of the research project. At most, three credits of CMSC 697 can be applied toward the M.S. degree.

### CMSC 698 Thesis

Hours to be arranged. 1-3 credits. May be repeated for credit. A total of three or six credits may be applied to the M.S. degree in applied mathematics or to the M.S. degree in mathematics (a total of 3 credits for an expository thesis or a total of six credits for a research thesis). Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis. Grade of "S," "U," or "F" may be assigned in this course.

## Engineering Program

### Faculty – Chemical Engineering

Chen, Rachel, Assistant Professor, Chemical Engineering

Ph.D. California Institute of Technology, Pasadena  
Enzymatic glycoprotein remodeling, combinatorial biocatalysis, enzymatic oligosaccharide synthesis.

Guiseppe-Elie, Anthony, Professor, Chemical Engineering

Sc.D. Massachusetts Institute of Technology  
Biosensors and biochips, smart materials, electronic nose.

Haas, Thomas, Professor, Chemical Engineering

Ph.D. Princeton University  
Polymer engineering.

Huvar, Gary S., Associate Professor, Chemical Engineering

Ph.D. North Carolina State University  
Kinetics, reaction engineering, polymer process engineering.

McGee, Henry, Founding Dean Emeritus and Professor of Chemical Engineering

Ph.D. Georgia Institute of Technology  
Chemical reactions and processing under extreme or unusual conditions.

McHugh, Mark A., Professor, Chemical Engineering

Ph.D. University of Delaware  
High-pressure phase equilibria with special emphasis on polymer solution behavior.

Tepper, Gary C., Assistant Professor, Chemical Engineering

Ph.D. University of California at San Diego  
Supercritical fluids, gamma-radiation detectors, environmental sensors, molecularly imprinted materials.

Wnek, Gary E., Professor and Department Chair, Chemical Engineering

Ph.D. University of Massachusetts, Amherst  
Electroactive polymers and their applications in medicine, biomaterials processing, fuel cells.

Wynne, Kenneth J., Professor of Chemical Engineering

Ph.D. University of Massachusetts  
Functional polymer surfaces, supercritical CO<sub>2</sub>-assisted polymer processing.

### Faculty – Electrical and Computer Engineering

Atkinson, Gary, Associate Professor, Electrical Engineering

Ph.D. University of California at Berkeley  
Advanced micro/nanofabrication, tunneling sensors.

Bandyopadhyay, Supriyo, Professor, Electrical Engineering

Ph.D. Purdue University  
Nanoelectronics, transport in submicron/quantum devices.

Cregger, Barton B., Assistant Professor, Electrical Engineering and Assistant Dean, School of Engineering

M.S. University of Virginia  
Microelectronics, new product development, manufacturing, quality systems.

Docef, Alen, Assistant Professor, Electrical Engineering

Ph.D. Georgia Institute of Technology  
Digital signal processing, communications systems, audio and visual systems, medical imaging.

Hobson, Rosalyn S., Assistant Professor, Electrical Engineering

Ph.D. University of Virginia  
Neural networks, control systems, signal processing, service-learning in engineering.

Hughes, Esther A., Assistant Professor, Electrical Engineering

Ph.D. Cornell University  
Computer engineering.

Iyer, Ashok, Professor and Department Chair, Electrical Engineering

Ph.D. Texas Tech University  
Linear and nonlinear control system design, robotic and aerospace applications.

Klenke, Robert H., Associate Professor, Electrical Engineering

Ph.D. University of Virginia  
Computer engineering, embedded systems, hardware/software codesign, system level design.

Mattauch, Robert J., Professor, Electrical Engineering and Dean, School of Engineering

Ph.D. North Carolina State University  
Microelectronics, semiconductor devices, VLSI circuit fabrication.

Morkoç, Hadis, Founders Professor of Electrical Engineering and Professor of Physics

Ph.D. Cornell University  
Compound semi-conductor materials and devices.

Pearson, Robert E., Associate Professor, Electrical Engineering

Ph.D. State University of New York at Buffalo  
Semiconductor device and process development, process and device simulation.

Tait, Gregory, Associate Professor, Electrical Engineering

Ph.D. Johns Hopkins University  
Microwave and photonic semiconductor devices, nonlinear microwave circuits.

Tucker, Jerry, Associate Professor, Electrical Engineering

Ph.D. Virginia Polytechnic Institute and State University

Computer architecture, parallel processing.

### Faculty – Mechanical Engineering

Cameron, Timothy M., Associate Professor, Mechanical Engineering

Ph.D. Carnegie Mellon University  
Noise and vibration measurement and control, acoustics, engineering systems dynamics.

Cook, Daniel P., Assistant Professor, Mechanical Engineering

Ph.D. University of California at Berkeley  
Fluid flow, heat transfer, magnetohydrodynamics, computational fluid dynamics.

Gad-el-Hak, Mohamed, Inez Caudill Professor and Department Chair, Mechanical Engineering

Ph.D. Johns Hopkins University  
Geophysical fluid dynamics, thermal systems, experimental fluid mechanics, micromechanics and microfluids.

McLeskey, James, Assistant Professor, Mechanical Engineering

Ph.D. University of Virginia  
Optical characterization of amorphous semiconductors.

Mossi, Karla, Assistant Professor, Mechanical Engineering

Ph.D. Old Dominion University  
Piezoelectric devices, smart materials.

Ounaies, Zoubeida, Assistant Professor, Mechanical Engineering

Ph.D. Pennsylvania State University  
Smart devices.

Speich, John, Assistant Professor, Mechanical Engineering

Ph.D. Vanderbilt University  
Robotics.

The Engineering program offers both the Master of Science and the Doctor of Philosophy degrees. The program utilizes the faculty and research facilities of Chemical Engineering, Mechanical Engineering, and Electrical and Computer Engineering to expose students to advanced and emerging technologies. Research thrust in the School of Engineering includes Life Sciences, Micro-Nano Technology and Manufacturing and Design. Engineering M.S. and Ph.D. degrees are multidisciplinary and provide a wide array of specialization areas including microelectronics, silicon fabrication, VLSI design, networks, embedded systems, image/signal processing, photonics/optical electronics neural networks, MEMS, digital communications, micro-nano technology, smart materials and devices, robotics, manufacturing and design, polymers, biochips, biochemical and biological engineering, and fuel cells. These areas cross the discipline lines of Chemical Engineering, Electrical and Computer Engineering and Mechanical Engineering. For students desiring to study and conduct research in these areas or related areas, detailed information is available through the graduate program coordinator or program chair of Chemical, Electrical and Computer, or Mechanical Engineering.

### Admission requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the School of Engineering, applicants to the Engineering program must have a B.S. degree in engineering or a closely related discipline.

### Degree requirements

Each student seeking the M. S. degree is required to take a minimum of 33 semester credits of approved graduate courses (including research). Ph.D. students must take a minimum of 27 semester credits (including research) beyond the M.S. degree. In addition to conducting significant research, all graduate students must complete course work in the two core area of manufacturing systems (ENGR 501 or ENGR 502) and business/management (MGMT 641 or MGMT 655 or STAT 541). No individual core or elective courses may be used for both M.S. and Ph.D. degrees. At least half of the credits required in the student's program must be those designated as exclusively for graduate students; that is, those at the 600 level or above.

### M.S. requirements in Engineering

The master of science student is expected to earn a minimum of six core course semester credits, three in manufacturing systems and three in business and management. Each student must complete a minimum of 15 semester credits in elective course work and 12 semester credits in the-sis research. All elective course work must be approved by the student's adviser. The total of all credits must be at least 33.

Typical program of study	
Core	6
Electives	15
Thesis Research	12
Total (minimum)	33

Students seeking to take elective course work and conduct their thesis research in Chemical, Electrical and Computer, or Mechanical Engineering should contact the graduate program coordinator or program chair of the desired discipline for detailed information about that discipline. Eighteen to 20 months of study usually are necessary to complete the requirements for the Master of Science degree in engineering. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the Master of Science degree. Generally, a maximum of six credits of approved graduate course work required for a master's degree may be transferred from another program at VCU or outside institution and applied toward the degree.

Each student must conduct an original investigation under the supervision of the permanent adviser and prepare a thesis reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. This study is reported in a thesis prepared in acceptable form and style. On approval of the thesis by the adviser, the student submits a copy to each member of the Advisory Committee. The thesis is examined by the student's Advisory Committee members, who decide upon its acceptability. Each committee member reports to the student's adviser when the thesis is acceptable for defense. The thesis is approved for defense only if accepted unanimously. On approval of the thesis, the student appears for a final oral examination administered by the student's Advisory Committee. This examination of an M.S. candidate includes the subject matter of course work as well as the thesis.

### Ph.D. requirements in Engineering

- A minimum of 60 post B.S. degree credit hours, including research credits, is generally required for the doctor of philosophy degree in Engineering. The doctor of philosophy student is expected to earn a minimum of six core course semester credits, three in manufacturing systems and three in business and management unless credits were received for these courses (or equivalent courses) as part of the master's degree. Students holding the master's degree (and six credits of core course work) must complete a minimum of six semester credits in elective course work and 21 semester credits in dissertation research. The student's adviser must approve all elective course work. The total of all credits must be at least 27 excluding credits for core courses.
- Students entering the doctoral program with a B.S. degree, but not the M.S., will require a minimum of 60 post-B.S. degree credits (33 for M.S. level and an additional 27 for Ph.D. level).

Typical program of study M.S. to Ph.D.	
Core	-
Electives	6
Research	21
Total (minimum)	27

Typical program of study B.S. to Ph.D.	
Core	6
Electives	21
Research	33
Total (minimum)	60

Students seeking to take elective course work and conduct their dissertation research in Chemical, Electrical and Computer, or Mechanical Engineering should contact the graduate program coordinator or program chair of the desired discipline for detailed information about that discipline. A minimum of three years of study, including research, is necessary to complete all requirements for the Ph.D.

- A period of residence of at least three consecutive semesters is required. Residency is defined as registration for at least nine credits per semester. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited toward the doctor of philosophy degree.

## Graduate courses in Engineering (ENGR)

### ENGR 501 Advanced Manufacturing Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRM 425 and 426 or permission of instructor. Studies the fundamental systems required for mechanical, chemical and electrical manufacturing, including material procurement, logistics, quality and distribution. The principles are applied to all types of manufacturing processes from project through continuous. Advanced systems for lean, agile and global manufacturing also are covered.

### ENGR 502 Product Design and Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: Admission to engineering graduate school and/or permission of instructor. Presents engineering concepts and techniques necessary to successfully develop new products and introduce them to the marketplace. Topics include development processes, converting direct customer input to marketing specifications, creating technical specifications, quantifying customer input, using rapid prototyping to reduce development time, design for manufacturability and product certification issues.

### ENGR 505 Characterization of Materials

Semester course; 3 lecture hours. 3 credits. Focuses on characterization techniques of solids at the molecular, surface and bulk levels, including resonant, vibrational and electronic spectroscopies, X-ray methods and optical and electron microscopies. A connection will be developed between the theoretically-derived and experimentally-observed properties of materials and a rationale also will be developed for choosing an appropriate characterization technique for a given material.

### ENGR 520 Semiconductor and Quantum Electronics

Semester course; 3 lecture hours. 3 credits. Dedicated to electronic structures, band structure calculations, optical absorption and emission, lasing in semiconductors, electron-photon interactions, heterostructures and nanostructured (quantum confined).

### ENGR 521 Advanced Semiconductor Devices

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 303, PHYS 420 and 440, or equivalents or permission of instructor. Studies the fundamentals of semiconductor heterojunctions, metal-semiconductor contacts, metal-oxide-semiconductor structures, defects, interface states, scaled MOS transistors and heterojunction bipolar transistors.

### ENGR 522 Micro-Electro-Mechanical Systems (MEMS)

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: ENGR 334 and EGRE 435 or equivalents. Designed to bring together concepts from all branches of engineering, including biomedical engineering, and to apply these concepts to the creation of miniature systems. The operation of many common transducers will be described. The course focuses on how a variety of different micro-fabrication processes can be combined in order to make miniature versions of these systems or make entirely new systems.

### ENGR 525 Fundamentals of Photonics Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 303, 309 and 310 or equivalents. An introduction to

the interaction of electromagnetic lightwaves with solid-state materials. Based on the quantum mechanics of photon emission and absorption, the generation and detection of coherent light by semiconductor lasers and photodetectors are investigated. Optical waveguides also are studies for use in sensors employing interferometric and evanescent-field principles. Examples of integrated photonic sensors are presented for mechanical, chemical and biological systems.

### ENGR 526/CMSC 506 Computer Networks and Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 312. Theoretical and applied analysis of basic data communication systems; design of networks in the framework of the OSI reference model; Local and Wide Area Networks; performance analysis of networks; error control and security. Students will work in teams to design and implement a small computer network.

### ENGR 533 VLSI Design

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 307 and EGRE 364 or consent of instructor. Analysis of NMOS and PMOS transistor design and their use in implementing digital logic. Implementation and layout of simple and complex digital logic cells using CMOS and other techniques. Fabrication design rules and design technology. VLSI chip layout and implementation. Students will design a complete VLSI chip using commercial design tools. The resulting designs will be submitted for fabrication using the MOSIS process.

### ENGR 535 Digital Signal Processing

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: EGRE 337 or consent of instructor. The course focuses on digital signal processing theory and algorithms, including sampling theorems, transform analysis and filter design techniques. Discrete-time signals and systems, and filter design techniques are treated. Several applications of DSP in telecommunications, image and video processing, and speech and audio processing are studied.

### ENGR 543 Advanced Reaction Engineering

Semester course; 3 lecture hours. 3 credits. Provides the fundamental background needed to effectively design reactors at the macroscale exemplified by batch, pilot and plant operations or at the micro- and nano-scale exemplified by the current trend to miniaturize unit operations. A quantitative analysis is developed to explain why "real" reactor performance departs from ideal batch, CSTR and plug flow reactor performance.

### ENGR 544 Applied Transport Phenomena

Semester course; 3 lecture hours. 3 credits. Provides the basis for analyzing mass, energy and momentum transport issues in environmental, chemical, biological and industrial processes. Molecular mechanisms of momentum transport, energy transport and mass diffusion are utilized to develop an engineering analysis of a given process. This molecular approach is complemented with macroscopic mass, momentum and mechanical energy balances.

### ENGR 549 Process Biotechnology

Semester course; 3 lecture hours. 3 credits. Designed to provide a rational basis addressing engineering challenges in the emerging biotechnology area. The course material is broad in scope covering biochemical synthesis, bioreactor design and bioprocess monitoring and control. It also deals with important issues associ-

ated with separation and purification techniques used with biomaterials.

### ENGR 554 Molecular Thermodynamics for Engineers

Semester course; 3 lecture hours. 3 credits. Provides the molecular-based background needed to apply thermodynamic principles to a broad range of process technologies. The molecular basis of contemporary equations of state, liquid solution models and fugacity estimation techniques will be developed and used to analyze processes. Particular attention is paid to interpreting phase equilibrium problems associated with binary and multicomponent mixtures.

### ENGR 555/MATH 555 Dynamics and Multivariable Control I

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 301 and 310 or the equivalent. Systems of differential equations with controls, linear control systems, controllability, observability, introduction to feedback control and stabilization.

### ENGR 561 Advanced Fluid Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 301, 302, 304 and computer programming or equivalent or permission of instructor. Covers the principles necessary to analyze viscous flow. Students learn how to formulate solutions to general viscous flow problems.

### ENGR 565 Design Optimization

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 420 and 421 or equivalent or permission of instructor. Focuses on providing students with a methodology and set of skills to apply in improving engineering components, systems and processes. The design of better products and processes is a fundamental goal of all engineering.

### ENGR 566 Advanced Computer Aided Design and Manufacturing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 420, 421, 425, 426 or equivalents or permission of instructor. Provides students with an understanding of how modern computer techniques can enhance the generation, analysis, synthesis, manufacturing and quality of engineering products. The design and manufacture of better products and processes is a fundamental goal of all engineering disciplines.

### ENGR 568 Robot Manipulators

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 427 or permission of instructor. Provides students with a basic knowledge in the dynamic analysis and control of robot manipulators. Topics include Jacobian analysis, manipulator dynamics, linear and nonlinear control of manipulators, force control of manipulators, robot manipulator applications and an introduction to telemanipulation.

### ENGR 573 Engineering Acoustics

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing or permission of instructor. Designed to equip students to perform design work, testing and research in structural acoustics and vibrations. Applications from the fields of automotive, aerospace, marine, architectural, medical equipment and consumer appliance industries will be investigated.

### **ENGR 591 Special Topics in Engineering**

Semester course; 1-4 credits. I-II. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of research training.

### **ENGR 623 Nanostructures and Nanodevices**

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 303, PHYS 420 and 440, equivalents or permission of instructor. Devoted to the fundamentals and technology of semiconductor nanostructures and relevant devices. Engineering and physics of new solid state devices, confined structures in one, two and three dimensions and their effect on more traditional solid state devices are covered.

### **ENGR 630 Neural Networks**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Introduces students to the fundamental theory, design and applications of neural networks. Topics covered will include network architectures, the learning process, types of learning, single layer perceptrons, multilayer perceptrons and neural network applications.

### **ENGR 631 Embedded Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 426 and 427 or equivalents. Presents advanced material in the area of the design, implementation and testing of embedded computer systems intended to operate as part of a larger system. Topics to be discussed include: specification and performance modeling, hardware/software partitioning and hardware/software co-design, hardware synthesis, implementation technologies such as ASICs and FPGAs, dependability analysis and the design of dependable systems, production testing and cost analysis for the design of digital systems. A large scale design project that will make extensive use of commercial EDA tools and the VHDL language will be included in the course.

### **ENGR 633 Advanced VLSI Systems Design**

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 429 or equivalent. Design techniques, implementation technologies and device design for high speed, large scale and low power integrated circuits. Topics presented include: submicron technologies, devices and architectures for low power VLSI,

high speed clocking issues, BiCMOS devices and circuits, I/O circuit design, design for testing, analog VLSI, VLSI design methodologies, and physical design and VLSI algorithms. The course will include a design project for a complex VLSI device which will be performed using commercial design tools.

### **ENGR 634 Advanced Digital Theory**

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 254 or equivalent. Addresses topics and techniques in advanced switching theory that are relevant to the design of modern digital systems. Topics covered include: mathematical foundations, logic functions and their representations, optimization, verification, synthesis, synchronous and asynchronous finite state machines, modular designs, and fault detection.

### **ENGR 635/CMSC 605 Advanced Computer Architecture**

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 505 or EGRE 426, or consent of instructor. This course will focus on the design and analysis of high performance computer architectures. Topics investigated include: pipeline design, super-scalar computers, multiprocessors, memory systems, peripherals, interfacing techniques, networks, performance and software issues.

### **ENGR 645 Biosensors and Bioelectronic Devices**

Semester course; 3 lecture hours. 3 credits. This course develops the methodologies used in the design, fabrication and application of biosensors and bioelectronic devices to monitoring problems in the environmental, medical and chemicals industries. Fundamentals of measurement science will be applied to optical, electrochemical, mass and thermal means of signal transduction. Fundamentals of surface science will be used to interpret bio-immobilization, biofouling and non-specific interactions of enzymes, antibodies and DNA at surfaces.

### **ENGR 655/MATH 655 Dynamics and Multivariable Control II**

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 555 and MATH 507 recommended, or permission on instructor. Control problems for nonlinear systems of ordinary differential equations, methods of feedback control to achieve control objectives.

### **ENGR 661 Computational Fluid Dynamics**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 561 or equivalent or permission of instructor. Teaches students how to perform two- and three-dimensional fluid flow and heat transfer analyses. Students will be able to understand and use most of the commercial flow analyses applied in industry today.

### **ENGR 662 Advanced Turbomachinery Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 561 and 661 or permission of instructor. Teaches students the principles used in analyzing/designing compressors and turbines. Students will be expected to design a gas turbine to meet specific mission requirements. Upon completion of the course, students will be able to understand the design systems and techniques used in the aeropropulsion and gas turbine industries.

### **ENGR 690 Engineering Research Seminar**

Semester course; 1 credit; may be repeated for a maximum of two credits. Presentations and discussion of current problems and developments in engineering by students, staff and visiting lecturers.

### **ENGR 691 Special Topics in Engineering**

Semester course; 1-4 lecture hours. 1-4 credits. Prerequisites: At least one graduate-level engineering course and permission of instructor. An advanced study of selected topic(s) in engineering. See the Schedule of Classes for specific topic(s).

### **ENGR 697 Directed Research**

1-9 credits. Research directed towards completion of the requirements for M.S. and Ph.D. Engineering degrees under the direction of engineering faculty and an advisory committee.

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## **Commonwealth Graduate Engineering Program**

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The degree requirements for the Commonwealth Graduate Engineering Program are described in the Interdisciplinary and Cooperative Graduate Study chapter of this bulletin.

# School of Medicine

## Graduate Programs

The School of Medicine is located on the Medical College of Virginia Campus of Virginia Commonwealth University.

### Programs

Graduate programs offering master's (M.S.) and doctoral (Ph.D.) training in the School of Medicine include:

anatomy  
 biochemistry  
 biostatistics  
 human genetics  
 microbiology and immunology  
 pharmacology and toxicology  
 physiology

Doctoral (Ph.D.) training programs are also offered in the following :

epidemiology  
 pathology

A two-semester post-baccalaureate certificate program offering training for students seeking admission to professional school (i.e., School of Medicine, School of Dentistry) is available as the Pre-medical Basic Health Sciences Certificate. Defined curricula, which also may serve as a foundation in other advanced degree programs are offered in the following disciplines:

anatomy  
 biochemistry  
 human genetics  
 microbiology and immunology  
 pharmacology and toxicology  
 physiology

The school also offers an M.D./Ph.D. Training Program, an M.D./M.P.H. Program, a Master of Genetics Counseling Program, combined degree programs at the M.S. and Ph.D. level in cooperation with the School of Dentistry and combined Anatomy/Physical Therapy and Physiology/Physical Therapy Ph.D. programs. In addition, the Department of Preventive Medicine and Community Health offers a program leading to the Master of Public Health (M.P.H.) degree. Recognizing that graduate education

should prepare students for a variety of career options, and that developments in the basic sciences have expanded the breadth of scholarship, the school has developed approaches to interdisciplinary education, particularly in the areas of neuroscience, molecular biology and genetics, immunology and structural biology.

The basic science departments hold responsibility for providing instruction in their disciplines for students (at the undergraduate, graduate and professional level) in the other schools and colleges of the university as appropriate. This institutional outreach provides added opportunities for the development of collaborative activity in scholarship and teaching experience relevant to graduate education. Programmatic outreach extends beyond institutional boundaries with cooperative scholarly and educational programs that have been initiated with Virginia Union University, Virginia State University and Hampton University, three HBCU (Historically Black Colleges/Universities) institutions in the region. The scholarly programs of the faculty also provide an avenue for international experience for students in the various programs.

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 Richmond, VA 23298-0565  
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**Heber H. Newsome**

Dean, School of Medicine  
 M.D.

**Jan F. Chlebowski**

Associate Dean for Graduate Education  
 Ph.D.

### Organization

In the School of Medicine, advanced degree programs are coordinated through the Office of the Associate Dean for Graduate Education who acts for the dean on all issues related to administration of advanced degree programs. Each advanced degree program is represented by a faculty member who serves as director for graduate programs. Directors are appointed either by the chair of the department offering graduate degrees or, in the case of interdisciplinary programs, by the dean in consultation with the chairs of par-

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ticipating departments. The directors of graduate programs act on behalf of the programs and hold the responsibility and authority to represent the respective department(s) and their faculty to the school.

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## **MCV Campus Graduate Committee**

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The assembled directors of graduate programs and the associate dean for graduate education form the MCV Campus Graduate Committee, with the associate dean serving as chair of the committee. This committee holds the responsibility for ensuring appropriate administration of graduate programs, reviewing modifications of didactic courses and new course offerings, reviewing proposed modifications of program curricula to ensure maintenance of standards of quality, avoid duplication and comply with the missions of the school, and for recommending action to the dean. The committee members provide the pool of candidates from which the school representatives are chosen to the University Graduate Council.

The School of Medicine follows the Policies of the School of Graduate Studies with regard to the modification of existing courses, curricula and programs as well as the introduction of new offerings. Proposals will normally come from the faculty acting through departmental bodies charged with the responsibility of monitoring academic training. In the case of offerings in interdisciplinary areas, these will normally require the input and approval of departments whose faculty and students are participants. The Associate Dean for Graduate Education in the School of Medicine may assist in the coordination of the proposal process. Proposed changes and additions are, under University guidelines, subject to review by the Curriculum Committee of the School. The MCV Campus Graduate Committee serves as the Curriculum Committee for the School of Medicine. On approval by the MCV Campus Graduate Committee, the approval of the Dean of the School of Medicine is required prior to submission to University Graduate Council for review.

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## **Requirements for admission**

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Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

1. The purpose of admission requirements and procedures is to ensure selection of

competent students whose motivation, ability, education and character qualify them for graduate study in preparation for a career in science.

2. The following credentials constitute an application and should be sent to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.
  - a. Application for admission on a form furnished to the applicant on request. A fee in the form of a check or money order (payable to VCU), must accompany the application. The fee cannot be returned nor credited toward tuition payment.
  - b. Official transcripts of all undergraduate and graduate work sent directly from college or university registrars to the School of Graduate Studies.
  - c. Letters of recommendation from three present or former teachers or others the applicant believes to be qualified to evaluate fitness to engage in graduate study for the degree in the field of choice.
  - d. A personal statement from the applicant summarizing motivation, education and aims in pursuing graduate study.
  - e. Verbal, quantitative, and analytical portions of the Graduate Record Examination (GRE) are required. Medical College Admission Test or Dental Aptitude Test may be acceptable in lieu of the GRE for selected programs.
  - f. International applicants for whom English is a foreign language must meet departmental admission requirements for performance on the TOEFL (Test of English as a Foreign Language). See section on international students in the Graduate Studies at VCU chapter of this bulletin.
3. Acceptance of an applicant is based upon the recommendation of the director of graduate programs of the relevant program.

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## **Registration**

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While most students register for the first semester beginning in August, arrangements may be made to initiate graduate work at other times during the academic year.

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## **Scholarships, assistantships and fellowships**

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A number of state or federal teaching and research assistantships, scholarships or fellowships are available. A brief description of financial aid based on demonstrated need is contained in the Graduate Studies at VCU chapter of this bulletin. Need-based financial aid programs include National Direct Student Loan, college work study and institutional loans.

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## **Enrollment**

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Students are enrolled in a specific program offered by the school. The details of didactic and scholarly requirements are available from the individual programs. Specific curriculum requirements, mechanisms for the appointment of advisers and the format of written and oral comprehensive examinations are established by individual programs.

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## **The student adviser and advisory committee**

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Students receive guidance and counsel from the director of graduate programs for the appropriate program prior to appointment of the permanent adviser. The permanent adviser holds the primary responsibility for monitoring the development of the student in the program and providing the appropriate guidance and counsel essential to the scholarly development of the student.

An advisory committee, appointed shortly after the permanent adviser is appointed, serves as both an examining and consultative body, functioning to assist the development of the student. Committee members hold a special responsibility as a source of counsel for each student.

1. Each student shall have an adviser and an advisory committee.
2. Appointment of the adviser:
  - a. The initial adviser will be the director of the graduate program or his/her designee prior to appointment of the permanent adviser.
  - b. A permanent adviser shall be appointed from the graduate faculty by the chair of the MCV Campus Graduate Committee upon recommendation of the chair of the student's major department. Appointment should

be made no later than the beginning of the fall semester following matriculation. A change in the permanent adviser may be made by the chair of the MCV Campus Graduate Committee upon recommendation of the chair of the major department.

3. Duties of the adviser:

- a. The adviser shall, with the student's advisory committee, have responsibility for guiding the student's academic program.
- b. The adviser shall develop a plan for the student's didactic program with the student.
- c. The adviser shall, on the basis of the proposed didactic and scholarly program for the student, identify members of the faculty to comprise the student's advisory committee and elicit their agreement to serve, the adviser serving as the chair of the committee.
- d. The adviser shall supervise the student's research work and thesis preparation and be one of the examiners of the thesis (M.S.)/dissertation (Ph.D.).
- e. At the close of the spring semester, the adviser shall submit to the program director or the chair of the MCV Campus Graduate Committee a report covering the progress of the student. Copies of the report should be provided to the student and the membership of the student advisory committee by the adviser.

4. The student's advisory committee:

- a. The student's advisory committee shall be appointed no later than the end of the fall semester of the second year after matriculation by the chair of the MCV Campus Graduate Committee, upon recommendation of the student's adviser, review by the graduate program director and recommendation of the chair of the department of the permanent adviser. Appointment of the student advisory committee must be done within three months of the appointment of the permanent adviser and prior to the administration of comprehensive (or final) examinations. The composition of the advisory committee shall be such that significant areas of the student's scholarly program

are represented in the expertise of the faculty members.

- i. The committee for the Ph.D. candidate shall consist of a minimum of five members as follows: the student's adviser; two other members of the graduate faculty of the department/program in which the student is enrolled; and at least two other members of the graduate faculty from departments other than the one in which the student is enrolled (where feasible, from two different departments).
- ii. The committee for the M.S. candidate shall consist of a minimum of three members as follows: the student's adviser (who serves as chair of the committee); one other member of the graduate faculty of the department/program in which the student is enrolled; and one other member of the graduate faculty from a department other than the one in which the student is enrolled.
- iii. A faculty member who is not a member of the graduate faculty may be appointed to a student advisory committee if approved by the MCV Campus Graduate Committee. Appointment is made by the dean, School of Graduate Studies.
- b. Duties of the student's advisory committee:
  - i. The advisory committee functions as an advisory body to ensure that timely progress toward degree completion is being achieved, as an examining body participating as appropriate for the intended degree in written qualifying examinations and conducting the oral qualifying examination and final examination, and as a consultative body to provide scholarly counsel.
  - ii. The student's advisory committee shall work with the student's adviser in guiding the student's graduate program and shall meet at least annually. It is strongly recommended that the advisory committee meet with the student prior to administration of the comprehensive examination(s) by the committee.

- iii. The student's advisory committee shall recommend and approve a degree program (including foreign language if applicable) for the student as soon as it is practical. The proposed program should be filed with the chair of the MCV Campus Graduate Committee no later than the third semester of study.
- iv. The student's advisory committee shall conduct the oral comprehensive and final examination.

## General requirements for graduate degrees

1. All full-time graduate students are expected to register for a minimum of 12 hours of graduate credit per semester and six semester hours during the summer, exclusive of audited courses. This requirement includes research. As an example, when students are registered for 10 credits in formal courses, they are expected to undertake five credits of research under the direction of their adviser or any approved faculty member. These courses shall be graded as "S" (satisfactory), "U" (unsatisfactory) or "F" (fail). Other grade interpretations are described in the Graduate Studies at VCU chapter of this bulletin. Registration for one credit hour is permitted only with prior permission.
2. Students are required to remain in good academic standing through the course of their degree program. Unsatisfactory student performance includes:
  - a. the assignment of a grade of "U," "D" or "F" in any course.
  - b. failure to maintain a cumulative GPA of 2.5 or greater.
  - c. failure to pass the written or oral comprehensive examination.
  - d. failure to pass the final examination.

A student whose performance is unsatisfactory must obtain the approval of the MCV Campus Graduate Committee to gain permission for continuing in the graduate program. The committee elicits the recommendation of the department/program (as represented by the director of graduate studies of the appropriate

program) and, as appropriate, the student's adviser in making a determination. Unsatisfactory performance also constitutes grounds for the termination of financial assistance to the student.

3. Students may not take the comprehensive examination for the Ph.D. degree if their overall GPA is less than 2.5 or if the GPA for courses within the major department is below 3.0. Students may not take the final oral examination for the M.S. or Ph.D. degree if their overall GPA is below 3.0. The examining body for the administration of the comprehensive examinations and the final examination is the student advisory committee. For the oral comprehensive examination for Ph.D. students and the final examinations for M.S. students, the body is supplemented by the addition of a representative of the MCV Campus Graduate Committee who chairs the examining body. The representative must be a member of the graduate faculty and is appointed by the chair of the MCV Campus Graduate Committee. The representative holds the responsibility for compliance with protocols appropriate to the examination, including the equitable treatment of the candidate.
4. Copies of the thesis/dissertation consistent with university standards shall be provided to the members of the student's advisory committee three weeks or more before the date of the defense of the thesis/dissertation. Following acceptance of the thesis/dissertation defense schedule by the committee, the student must submit a copy of the thesis/dissertation and a request for scheduling of the final examination to the chair of the MCV Campus Graduate Committee a minimum of ten working days in advance of the examination date. After passing the final examination, it shall be the responsibility of the candidate to present to the dean's office the approved original thesis/dissertation plus the minimum required number of copies (three for M.S., four for Ph.D.) in final form suitable for binding. In consultation with the office staff, the candidate shall be responsible for the binding and the processing of the thesis through VCU Libraries and for the payment of all charges for these services.
5. A degree is granted only after all requirements have been fulfilled,

including payment of all fees to the university, and after submission of the copies of the thesis for binding.

6. VCU currently requires registration for a defined credit hour level during both the didactic and research phases of advanced degree training. For programs requiring the preparation of a thesis or dissertation, there is therefore no obligatory linkage between the accumulation of credit hours and an expectation that a degree be awarded.

As a guide to monitoring the timely completion of the degree within the present enrollment framework, the accumulation of 80 credit hours for a M.S. degree and 180 credit hours for a Ph.D. degree can be taken as a reasonable measure. These credit hour totals refer to degree programs requiring the preparation of a thesis or dissertation. Unless explicitly stated, the figures cited above apply to Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs offered by the School of Medicine.

### Post-baccalaureate Pre-medical Basic Health Sciences Certificate Program

This program is designed as a two-semester didactic program offering six departmentally-based curricula in the basic sciences. Curricula consist of a total of 27 credit hours of graduate courses offering students an advanced level of training in subject areas critical to professional (M.D., D.D.S.) degree programs. The certificate degree is offered by the departments of Anatomy, Biochemistry and Molecular Biophysics, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, and Physiology.

Completion of the program and awarding the certificate degree requires that students complete a minimum of 27 credit hours of course work, maintaining an overall GPA of 3.0. Course requirements and elective options are defined by the departments.

The program has been structured on a disciplinary basis to allow the accumulation of didactic credit hours which may be applicable to advanced degree training at the M.S. or Ph.D. level in programs offered by the departments of the school. Students interested in this potential option must formally apply to the program of interest.

Enrollment in and/or completion of the program is not a guarantee of admission to either the M.D. or advanced degree pro-

grams offered by VCU. However, the curricula have been structured with the counsel of the Office of Admissions of the VCU School of Medicine to offer training which enhances performance on standardized admissions tests and provides a grounding applicable to a variety of career options.

### Master of science

1. Advanced graduate study leading to the master of science degree is offered in the departments of Anatomy and Neurobiology, Biochemistry, Biostatistics, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, and Physiology. The Department of Preventive Medicine and Community Health offers the Master of Public Health degree and the Department of Human Genetics offers the Master of Genetic Counseling degree.
2. A minimum of 24 semester course hours is required, exclusive of research credits. In practice, it is found that two years of study are usually necessary to complete the requirements. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the master of science degree. Generally a maximum of one-third of the hours required for a master's degree may be transferred from another VCU program or outside institution and applied toward the degree upon recommendation of the student's director of graduate programs with the concurrence by the chair of the MCV Campus Graduate Committee.
3. Each student must conduct an original investigation under the supervision of the permanent adviser, prepare a thesis reporting the results of this research and analyze its significance in relation to existing scientific knowledge. This study is reported in a thesis prepared in acceptable form and style.
4. The body of experimental work to be incorporated into the thesis is subject to the approval of the student advisory committee members. The advisory committee should, therefore, be formally consulted as the research project nears completion to ensure that there is agreement with respect to the material deemed necessary and sufficient for incorporation into the thesis. Such consultation will normally occur in the



form of a meeting of the advisory committee with the student. The faculty adviser has a responsibility to advise the student when the meeting of the advisory committee for this purpose should take place.

5. The thesis is prepared in an acceptable form and style with the counsel of the faculty adviser. The faculty adviser determines when the thesis document can serve as the basis for the final oral examination (or thesis defense). With the approval of the faculty adviser, the final oral examination by the advisory committee is scheduled and the thesis document is distributed to the advisory committee. Distribution of the thesis document to the advisory committee should take place at least ten working days in advance of the final oral examination. The Office of Graduate Education is to be informed of the scheduling of the final oral examination in advance of the scheduled date. The Office of Graduate Education then identifies a representative of the MCV Campus Graduate Committee to chair the examination, and provides an announcement of the final oral examination, which includes the name and department of the candidate together with the title of the thesis and the day, place and time of the final oral examination.
6. The final oral examination is conducted by the student advisory committee at the designated time and place and is open to the faculty. A representative of the MCV Campus Graduate Committee serves as the chair of the examination committee and is a voting member of the examination committee. The subject matter of the examination includes the subject matter of course work as well as the content of the thesis. A favorable vote of the advisory committee with no more than one negative vote is required to indicate that the candidate has passed the final oral examination. All members of the examination committee must vote. The outcome of the final oral examination is reported to the Office of Graduate Education. If the outcome is negative, the final oral examination may be retaken with the approval of the MCV Campus Graduate Committee. Advance approval is requested in writing by the department on behalf of the candidate.

7. The student advisory committee approves the thesis document as acceptable after the final oral examination has been successfully completed. Approval of the thesis as acceptable is indicated by the signature of all members of the advisory committee on the signature page of the thesis. Approval of the thesis by the advisory committee must be unanimous.

A thesis is not required for completion of the Master of Genetic Counseling Program. In lieu of the thesis, students in this tract are required to successfully pass comprehensive oral and written examinations.

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### Master of Public Health

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Advanced graduate study leading to the master of public health degree is offered in the Department of Preventive Medicine and Community Health.

A minimum of 36 semester credits is required, including research credits. One year of full-time study is usually necessary to complete the requirements. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the master of public health. Generally, a maximum of six credits, required for the master of public health degree, may be transferred from another VCU program or outside institution and applied toward the degree upon recommendation of the members of the department's curriculum committee and the approval of the chair of the department.

Under the guidance of a faculty adviser, each student must conduct a scientific investigation on a topic relevant to public health, prepare and report the results of this research. The study report should be in an acceptable form and style.

The research document is examined by the student's adviser and/or preceptor for acceptability.

Upon approval of the research document by the adviser and/or preceptor, the student will give a final oral presentation administered by the department. The student's adviser and preceptor will submit a final grade to the department.

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### Doctor of philosophy

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1. Advanced graduate study leading to a doctor of philosophy degree is offered in the departments of Anatomy and Neurobiology, Biochemistry, Biostatistics, Human Genetics,

Microbiology and Immunology, Pathology, Pharmacology and Toxicology, and Physiology.

2. A minimum of 30 credit hours exclusive of research credits is generally required. In practice, a minimum of four years of study, including research, is necessary to complete all requirements.
3. For all Ph.D. programs, a period of residence of at least two consecutive semesters is required. In the context of Ph.D. training, "residence" refers to full-time enrollment, equivalent to enrollment of nine or more credit hours in a given academic term. The School of Medicine recommends that doctoral students maintain "residency" status for one academic year (fall and spring terms), usually during the initial year of study. This recommendation is to ensure that the didactic component of training is not prolonged. Students should register in each academic term as a means of ensuring that timely progress toward degree completion is achieved. The specific requirements for residency will be detailed by the individual programs. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited toward the doctor of philosophy degree.

### Admission to candidacy

The development of the individual as an independent research scientist is a critical component of the Ph.D. degree. The potential for such development is assessed on the basis of both mastery of subject matter and research competency as judged in the context of written and oral examinations administered at the level of department or program. Students are admitted to candidacy by the dean on the basis of completing examinations as required and the recommendation of the faculty adviser, student advisory committee and graduate program director.

### Comprehensive examinations

In order to advance to doctoral candidacy, the student must pass both written and oral comprehensive examinations. The written examination(s) generally focus(es) on the subject matter deemed critical as a foundation in the particular program. The written examination is largely based on material covered in required course work and its application to theoretical and prac-

tical problems. The oral examination, which follows successful completion of the written examination(s), is administered to assess the ability of the candidate to integrate information and display an appropriate mastery of problem-solving capabilities.

1. To advance to candidacy, the student shall take written and oral examinations designed to determine the potential of the individual for development as an independent research scientist. Advancement to candidacy should preferably take place prior to initiating the third academic year in the program. The written examination is administered by the student's department/program. In the event of failure of the written comprehensive examination, the student, with the approval of the MCV Campus Graduate Committee, may be permitted to repeat the written examination.
2. After passing the written examination(s), the student is eligible for the oral examination. The oral examination is conducted by the student's advisory committee and is chaired by a graduate faculty member representing the MCV Campus Graduate Committee who serves as a voting member of the examining committee. The oral examination is to be administered no later than six months after passing the written examination. (Departments/programs may require a shorter interval.)
3. The oral examination is scheduled through the Office of Graduate Education. An announcement of the candidate's name, department/program and the time and place of the examination shall be posted at least 10 working days in advance of the examination. If a written document prepared by the candidate is a component of the examination, the document shall be provided to the members of the examining committee at least 10 working days in advance of the examination. The oral comprehensive examination is open to all members of the faculty. Faculty members in attendance may ask questions of the candidate, but their questions shall not be presented until after the advisory committee has completed its questions. Faculty members other than those on the advisory committee shall not vote on the success or failure of the candidate. If a student fails the oral examination, the student may be reexamined with the

approval of the MCV Campus Graduate Committee.

4. A favorable vote of the examining committee (all members of body being required to vote) with no more than one negative vote, is required to pass the examination. Members of the examining committee must vote on the performance as either pass or fail.
5. The oral examination must be completed successfully at least six months before submission of the dissertation.

### Dissertation research

1. The student must conduct a substantial original investigation under the supervision of the permanent adviser and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.
2. The body of experimental work to be incorporated into the dissertation is subject to the approval of the membership of the student advisory committee. The advisory committee should, therefore, be formally consulted as the research project nears completion to ensure that there is agreement with respect to the material deemed necessary and sufficient for incorporation into the dissertation. Such consultation will normally occur in the form of a meeting of the advisory committee with the student. The faculty adviser has a responsibility to advise the student when the meeting of the advisory committee for this purpose should take place.
3. The dissertation is prepared in an acceptable form and style with the counsel of the faculty adviser. The faculty adviser determines when the dissertation document can serve as the basis for the final oral examination (or dissertation defense). With the approval of the faculty adviser, the final oral examination by the advisory committee is scheduled and the dissertation document is distributed to the advisory committee. Distribution of the dissertation document to the advisory committee will usually occur at least ten working days in advance of the final oral examination. The Office of Graduate Education is informed of the scheduling of the final oral examination ten working days in advance of the examination. The Office of Graduate Education will then post an

announcement of the final oral examination to include the name and department of the candidate together with the title of the dissertation and the day, place and time of the final oral examination.

4. The final oral examination is conducted by the student advisory committee at a specified time and place, is chaired by the faculty adviser and is open to all members of the faculty. The subject matter of the examination is limited to the content of the candidate's dissertation and related areas. A favorable vote of the advisory committee with no more than one negative vote shall be required to indicate that the candidate has passed the final oral examination. All advisory committee members must vote. The outcome of the final oral examination is reported to the Office of Graduate Education. If the examination is not passed, the Student Advisory Committee must recommend a course of action for the student. The committee might, for example, recommend that a re-examination be scheduled, or that a major revision of the dissertation (including added data collection and/or analysis) be required prior to rescheduling of the examination, or that the student be terminated from the program or other action as deemed appropriate by the committee. A majority of the committee membership must concur in the recommended course of action. The recommendation must be communicated in writing to the appropriate graduate program director for approval within five working days of the examination. The program, acting through the graduate program director, shall accept the recommendation of the committee or determine an alternative within an additional five working days. The course of action approved by the program will be communicated in writing to the student by the graduate program director. The graduate program director shall inform the Office of Graduate Education of the School of Medicine in writing as to the action taken.

If a re-examination is the recommended course of action, a representative of the MCV Campus Graduate Committee will be appointed to serve as the chair of the examining committee.

5. The student advisory committee approves the dissertation document as

acceptable following the final oral examination. Approval of the dissertation as acceptable is indicated by the signature of all members of the advisory committee on the signature page of the dissertation. Approval of the dissertation by the advisory committee must be unanimous.

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### Nondegree-seeking students

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Students not admitted to a degree program must obtain permission from the course director before being allowed to register for courses.

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### Summer registration

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Graduate students are expected to devote six or more weeks during the summer to full-time research. Students registered for research credit are billed at the established tuition rate.

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### M.D./Ph.D. Program

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The M.D./Ph.D. Program seeks to prepare physician-scientists for careers that encompass aspects of health care ranging from the discipline of basic investigation to patient care. The program begins two months prior to the first year of medical school. These students arrive on campus for orientation and complete two laboratory rotations before the start of medical school classes. They complete the first two years of medical school and, after taking the first part of the U.S. National Medical Licensing Examination, enter a Ph.D.-granting department as a graduate student. Each student must meet the Ph.D. requirements of his or her department for course work, examinations and research. Many of the medical school courses will provide credits for the graduate phase, but students also must take additional graduate-level courses as determined by the dissertation adviser and advisory committee. The main undertaking at this phase is laboratory research which leads to the Ph.D. dissertation. After completion of doctoral degree requirements, students move to the clinical year of medical school. Students may begin their clinical year of medical school immediately after completion of doctoral (Ph.D.) requirements, regardless of the time in the calendar year, and, 14 months later, may complete their medical school requirements. These students are exempt from the major part of the fourth year of medical school.

Prospective students submit applications through the American Medical College Application Service (AMCAS). Upon review of the AMCAS documents, qualified applicants are sent supplemental admission materials, including an application for the M.D./Ph.D. Program. Those invited to Richmond for interviews will take part in the standard interview for the School of Medicine and also will meet with the director of the M.D./Ph.D. Program and one or more academic members of the M.D./Ph.D. Committee.

Admission of medical students regularly enrolled in these schools to the combined degree program is processed through the Office of Graduate Education of the School of Medicine by established procedures. The Medical College Admission Test or Dental Aptitude Test may be accepted in lieu of the GRE. Undergraduate transcripts and references are obtained from the professional school. No application fee is required of students already regularly enrolled as degree-seeking graduate students at the university.

The requirements for a combined professional school/graduate school degree in the School of Medicine are equivalent to those required of students seeking a graduate degree alone and are determined by the individual departments. A time limit of seven calendar years for the Ph.D. degree, beginning at the time of first registration in the graduate school, applies to work to be credited toward degrees for students in combined programs.

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### M.D./M.P.H. Program

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The objective of the coordinated M.D./M.P.H. Program is to provide high quality and in-depth training in public health to qualified medical students. The program includes four years of medical school (M-I, M-II, M-III and M-IV) and one year of study in the M.P.H. Program. After successful completion of M-III, the student starts the M.P.H. graduate program, returning to complete M-IV medical studies, after one year of full-time matriculation in the M.P.H. Program. The final year of the M.D./M.P.H. Program is the clinical M-IV year of preparation for internship and residency.

Since enrollment into the coordinated M.D./M.P.H. Program requires admission into both the School of Medicine and the School of Graduate Studies, each student must apply and be formally accepted into the M.P.H. Program. Students must success-

fully complete all required course work to be awarded the M.P.H. degree.

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### Combined M.S./Ph.D. and D.D.S. degree programs

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In cooperation with the School of Dentistry, students in dentistry with an interest in academic and research careers are afforded the opportunity to undergo advanced degree training while in dental school or residency. Admission of students enrolled in the School of Dentistry to combined degree programs is processed through the Office of Graduate Education of the School of Medicine by established procedures. The Dental Aptitude Test may be accepted in lieu of the GRE as an admission requirement. No application fee is required of students already regularly enrolled as degree-seeking graduate students at the university.

The requirements for a combined professional school/graduate school degree in basic health sciences are equivalent to those required of students seeking a graduate degree alone and are determined by the individual departments. A time limit of five calendar years for the M.S. and seven calendar years for the Ph.D. degree, beginning at the time of first registration in the graduate school, applies to work to be credited toward degrees for students in combined programs.

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### Interdisciplinary Ph.D. programs

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The School of Medicine offers interdisciplinary advanced degree training in neuroscience, and molecular biology and genetics. Training in neuroscience links the departments of Anatomy, Biochemistry and Molecular Biophysics, Pharmacology and Toxicology and Physiology providing didactic and research training reflecting the complementary interests of faculty across traditional disciplines. Training in molecular biology and genetics partners the departments of Biochemistry and Molecular Biophysics, Human Genetics, Microbiology and Immunology and Pharmacology and Toxicology in a comparable fashion. Both approaches to training afford students the opportunity to identify prospective research projects with faculty whose expertise lies in these emerging areas of biomedical science in the departments respectively identified previously.

The schools of Medicine and Allied Health Professions offer Ph.D. programs in

physical therapy and in anatomy/physical therapy and physiology/physical therapy. These research degrees are planned primarily as physical therapy faculty development programs; other needs may be met for individual students. Interested physical therapists should contact the departments of Anatomy or Physiology for details.

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## Termination of enrollment

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The university reserves the right to terminate the enrollment of any student for unlawful, disorderly or immoral conduct or for persistent failure to fulfill the purposes for which he or she was matriculated.

A student enrolled in a graduate program under the supervision of the MCV Campus Graduate Committee may be dismissed from the school in which he is enrolled for failure to meet academic requirements prescribed by his school or failure to exhibit the attitudes and skills deemed necessary to function within his chosen scientific discipline.

Any action by a graduate student in a program under the supervision of the MCV Campus Graduate Committee considered to be unprofessional conduct shall constitute cause for disciplinary action.

Unprofessional conduct includes, but is not limited to:

1. fraud or deceit in gaining admission to the university, i.e., false or obviously misleading representations on the admission application,
2. an act that violates the established legal standards regarding conduct of one person toward society (i.e., stealing, lying, cheating and slander),
3. conviction of a felony involving moral turpitude, and
4. plagiarism or other scientific misconduct.

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## Process handbook

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An expanded guide to protocols followed in the graduate programs administered by the School of Medicine is available to students and faculty. This manual of procedures should be consulted following matriculation in a particular program.

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## Departmental research interests

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The graduate course offerings and the list of graduate faculty for each department offering graduate work under the administration of the dean of the School of

Medicine are given in the appropriate school sections of this bulletin. The pages on which these may be found and brief statements of the research interests of the faculties of the departments follow.

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## School of Medicine

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### Department of Anatomy and Neurobiology (Page 249)

Research interests: morphological and functional studies of axonal reaction, cerebral blood flow, neurotransmitter imbalance and protein synthesis following traumatic or ischemic brain injury; neurophysiology, transmitter neurochemistry and neuroanatomy of eye movement; neural regeneration and myelination; brain mechanisms of multisensory integration; function of neuroglia in development and disease; ontogeny, aging and cell biology of the immune system and immune system dysfunction; immunobiology of antibody responses; molecular origins of brain tumors and therapeutic approaches to brain malignancy; gene expression in cardiac myocytes; molecular mechanisms of angiogenesis; endothelial pathophysiology; neuroendocrinology and hypothalamic control mechanisms; ultrastructure, immunocytochemistry and aging of the reproductive system; molecular genetics of lung and breast cancer; computer-assisted instructional methods for teaching gross anatomy, histology and neuroanatomy.

### Department of Biochemistry (Page 250)

Research interests: cellular and molecular signaling, structural biology, eukaryotic molecular biology, molecular genetics, genomics, proteomics, bioinformatics, enzymology and tumor biology. A wide variety of classes and seminars are offered, and the department resources are enriched through a broad range of collaborations with adjunct faculty and close ties with other departments and the private sector. This provides access to a spectrum of state-of-the-art technology, thus supporting research in diverse areas.

### Department of Biostatistics (Page 252)

Research interests: response surface applications to biomedical problems; correlation analysis; sequential analysis; multivariate analysis; statistical analysis of toxicology studies; linear models; categorical data analysis; statistical analysis of clinical trials; epidemiological and demographic research;

applications of Bayesian statistics to the medical sciences; robust statistics; stochastic modeling; time series analysis; statistical computing; survival analysis; bioinformatics.

### Department of Human Genetics

(Page 254)

Research interests: human cytogenetics and somatic cell genetics; biochemical and molecular genetics; human population, quantitative and behavior genetics; genetic epidemiology; clinical genetics including studies of twins, metabolic and neurosensory disorders, genetic counseling.

### Department of Microbiology and Immunology (Page 255)

Research interests: microbial biochemistry, ecology, genetics and physiology; molecular biology; genetic mechanisms and regulation of prokaryotic and eukaryotic cells; biologic transport; cellular differentiation; immunobiology; immunotoxicology; hypersensitivity mechanisms; immunopotentiality; host-parasite interactions; animal virology; mycology; microbial pathogenesis; cellular and molecular parasitology; cellular oncology; cellular and tumor immunology; cancer chemotherapy; antibiotics and chemotherapy.

### Department of Pathology (Page 257)

Research interests: biochemical and clinical applications of enzyme and protein immobilization, clinical enzymology, techniques in clinical chemistry, immune effector systems; molecular diagnostics; carcinogenesis; cell injury; toxicology; tumor progression, invasion and metastasis, microbial pathogenesis; gastrointestinal cancer; prostate cancer; telomerase in aging and cancer; functional genomics.

### Department of Pharmacology and Toxicology (Page 258)

Research interests: adrenergic receptors; analgesics; analytical toxicology; behavioral pharmacology and toxicology; cancer chemotherapy; carcinogenesis; central cardiovascular regulation; cholinergic mechanisms; clinical pharmacology; DNA damage and repair mechanisms; drug abuse; drug interactions; drug metabolizing enzymes; endogenous opioids; hepatotoxicology; ion and drug transport; immunotoxicology and immunopharmacology; macrophage function; microsomal proteins; neuropharmacology; peptide and drug synthesis; phospholipids; prostaglandins;

receptor mechanisms; reproductive toxicology; safety evaluation; secretory mechanisms; toxicokinetics.

### Department of Physiology (Page 261)

Research interests: cardiovascular physiology: microcirculation, cardiac excitability, ischemia/reperfusion injury, cell volume regulation, molecular biology of cardiac ion channels, tissue engineering; cell physiology: ion channels, signaling mechanisms, endocrine disruption, apoptosis, receptor mediated gene regulation, cell proliferation, excitation-contraction coupling; neuroscience: developmental plasticity, neural regeneration, chemical sensory mechanisms, motor and sensory processing, neural signaling mechanisms, trauma; gastrointestinal physiology: signaling mechanisms including G-protein coupling, growth factors, transmitters, enteric nervous system reflexes, neural growth and development.

### Department of Preventive Medicine and Community Health (Page 262)

Research interests: public health policy; environmental and occupational epidemiology; nutritional epidemiology; design, conduct, and analysis of epidemiologic studies; hearing loss; low back pain; violence prevention; cancer prevention in rural youth; international studies of diet and blood pressure; family and community studies of substance abuse; low birth weight, breast cancer; premenstrual syndrome; Guillain-Barré Syndrome; and health behavior assessment.

### Department of Anatomy and Neurobiology

Abubaker, A. Omar, Associate Professor (Oral and Maxillofacial Surgery)\*  
Ph.D., D.M.D. University of Pittsburgh  
Temporomandibular pathogenesis.

Astruc, Juan A., Professor Emeritus  
M.D., Ph.D. University of Granada  
Neuro-ophthalmology and ocular motility.

Beckman, Matthew J., Assistant Professor (Biochemistry and Molecular Biophysics)\*  
Ph.D. Iowa State University  
Cellular and molecular osteology.

Bigbee, John W., Associate Professor  
Ph.D. Stanford University  
Cell adhesion and neural development.

Broadbudd, William C., Associate Clinical Professor [Neurosurgery]†  
M.D. Case Western Reserve University  
Neuro-oncology, therapeutic approaches to brain malignancy.

Bullock, M. R. Ross, Professor (Neurosurgery)\*  
M.D. Birmingham, U.K.  
Ph.D. University of Natal  
Human head injury.

Christman, Carole W., Assistant Professor  
Ph.D. Virginia Commonwealth University  
Axonal response to injury and neural regeneration.

Churn, Severn B., Associate Professor (Neurology)\*  
Ph.D. Virginia Commonwealth University  
Neuropharmacology and epilepsy.

Clemon, Helen Ruth, Assistant Professor  
Ph.D. Virginia Commonwealth University  
Cortical and subcortical mechanisms of somatic sensation.

Colello, Raymond J., Assistant Professor  
D.Phil. Oxford University  
Role of neuroglia in development and disease.

Costanzo, Richard M., Professor (Physiology)\*  
Ph.D. State University of New York at Upstate Medical University  
Neural regeneration in the olfactory system.

Craig, Shirley S., Associate Professor Emerita  
Ph.D. Virginia Commonwealth University  
Mast cell biology.

Diegelmann, Robert F., Professor (Biochemistry)\*  
Ph.D. Georgetown University  
Biochemistry of extracellular matrix metabolism during tissue repair.

Ellison, Mary D., Assistant Professor (United Network for Organ Sharing)\*  
Ph.D. Virginia Commonwealth University  
Cerebral microvasculature.

Fillmore, Helen, Assistant Professor (Neurosurgery)\*  
Ph.D. University of Tennessee  
Neuro-oncology and neural stem cell biology.

Finucane, Sheryl D. G., Assistant Professor (Physical Therapy)\*  
Ph.D. Virginia Commonwealth University  
Rehabilitation strategies after physical injury.

Fuss, Babette, Assistant Professor  
Ph.D. Swiss Federal Institute of Technology (Zurich)  
Molecular genetics of myelination.

Geeraets, Ragnit, Associate Professor Emerita  
Ph.D. Virginia Commonwealth University  
Developmental biology of the eye, computer-assisted instructional methods.

Goldberg, Stephen J., Professor  
Ph.D. Clark University  
Cranial nerve motor unit physiology related with eye and tongue movement.

Graf, Martin R., Assistant Professor  
Ph.D. University of California at Irvine  
Neuroimmunology associated with CNS neoplasms.

Gudas, Stephen A., Associate Professor  
Ph.D. Virginia Commonwealth University  
Endothelial cell biology, cancer rehabilitation.

Haar, Jack L., Professor  
Ph.D. Ohio State University  
Immunobiology, thymic and hemopoietic stem cell differentiation.

Harris, Thomas M., Professor Emeritus  
Ph.D. University of North Carolina  
Developmental biology of the eye, computer-assisted instructional methods.

Jacobs, Kimberle M., Assistant Professor  
Ph.D. Brown University  
Cortical neurophysiology and epilepsy.

Jackson, Caroline G., Associate Professor Emerita  
Ph.D. Virginia Commonwealth University  
Developmental biology of the eye, computer-assisted instructional methods.

Johnson, James H., Professor  
Ph.D. University of California at Los Angeles  
Mechanisms controlling luteinizing hormone release, computer-assisted instructional materials.

Jollie, William P., Professor Emeritus  
Ph.D. Harvard University  
Reproductive biology: placental transport mechanisms.

Krieg Jr., Richard J., Professor  
Ph.D. University of California at Los Angeles  
Impairments of growth and reproduction during kidney disease.

Leichnetz, George R., Professor  
Ph.D. Ohio State University  
Cortical and subcortical brain connections concerned with eye movement.

Mayhew, Thomas P., Associate Professor (Physical Therapy)\*  
Ph.D. Virginia Commonwealth University  
Pediatric neuromuscular mechanisms.

McClung, J. Ross, Professor  
Ph.D. University of Texas at Galveston  
Anatomy of cranial nerve motor units associated with eye and tongue movement.

McQuiston, A. Rory, Assistant Professor  
Ph.D. University of Alberta  
Inhibitory interneuron control in neuronal networks.

Merchant, Randall E., Professor  
Ph.D. University of North Dakota  
Neurooncology, therapeutic approaches to brain malignancy.

Meredith, M. Alex, Professor  
Ph.D. Virginia Commonwealth University  
Cortical and subcortical mechanisms of multisensory integration.

Michener, Lori A., Assistant Professor (Physical Therapy)\*  
Ph.D. Medical College of Pennsylvania  
Shoulder mechanics and interventions in dysfunction.

Pakurar, Alice S., Associate Professor  
Ph.D. University of Michigan  
Computer-assisted instructional methods.

Phillips, Linda L., Assistant Professor  
Ph.D. Wake Forest University  
Gene expression following traumatic brain injury.

Povlishock, John T., Professor and Department Chair  
Ph.D. St. Louis University  
Axonal injury, neuroplasticity and impaired vascular reactivity with associated brain injury.

Ramoa, Ary S., Professor  
M.D., Ph.D. Rio de Janeiro, University of California at Berkeley  
Neurobiology, neuronal differentiation during eye development.

Reeves, Thomas M., Assistant Professor (Neurosurgery)\*

Ph.D. Southern Illinois University  
Neurophysiological correlates of neural injury.

Seibel, Hugo R., Professor  
Ph.D. University of Rochester  
Reproductive biology: pineal organ, computer-assisted instructional methods.

Shall, Mary Snyder, Associate Professor (Physical Therapy)\*  
Ph.D. Virginia Commonwealth University  
Cranial nerve physiology in motor control.

Sholley, Milton M., Professor  
Ph.D. Temple University  
Endothelial cell biology and angiogenesis.

Simpson, David G., Assistant Professor  
Ph.D. Northwestern University  
Gene expression in cardiac myocytes.

Szkal, Andras K., Professor  
Ph.D. University of Tennessee  
Immunobiology of antibody responses.

Taubenberger, Jeffrey K., Assistant Clinical Professor (Armed Forces Institute of Pathology)\*  
M.D./Ph.D. Virginia Commonwealth University  
Differentiation and gene regulation of lymphocyte development, molecular genetics of breast cancer and morbilliviruses.

Wei, Enoch P., Associate Professor  
Ph.D. University of North Carolina – Chapel Hill  
Regulation of cerebrovascular circulation.

\* Department in parentheses indicates primary appointment.

## Graduate courses in anatomy and neurobiology (ANAT)

### ANAT 301 Head and Neck Anatomy for Dental Hygienists

2 lecture and 1 seminar hours. 3 credits. Prerequisite: Admission to the Dental Hygiene Program. An overview of head and neck anatomy that examines the major osteological, neural, muscular, vascular and visceral features. Lectures will be supplemented by textbook, self-study packages and by brief laboratory exercises that provide hands-on exposure to these major anatomical features.

### ANAT 302 Microscopic Anatomy (Dental Hygiene)

Semester course; 2 lecture hours and 2 laboratory hours. 3 credits. A lecture course in the microscopic anatomy of general body tissues and the oral cavity.

### ANAT 501 Gross Anatomy (Dentistry)

Semester course; 5.5 lecture and 8 laboratory hours. 7 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

### ANAT 502 Microscopic Anatomy (Dentistry)

Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the normal tissues and organs of the human body at the microscopic level, with emphasis on the histological organization and development of the oral cavity.

### ANAT 503 Neuroanatomy (Dentistry)

Semester course; 1.5 lecture hours. 1.5 credits. This course provides the student with a broad exposure to the field of neuroanatomy. The structure and connec-

tions of the brain and spinal cord are stressed to prepare the student for dealing with physiological, pharmacological, and clinical aspects presented in other courses.

### ANAT 505 Principles of Human Anatomy (Pharmacy)

Semester course; 2.5 lecture and 1.5 laboratory hours. 3 credits. The structure of the human body is surveyed by studying micro-, neuro-, and gross anatomy. Emphasis is placed on basic concepts and their application to various body components.

### ANAT 509/PHIS 509/PHXT 509 Introduction to Neuroscience

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

### ANAT 525 Advanced Functional Anatomy (Occupational Therapy)

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisites: BIOL 205 or equivalent and permission of the instructor. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Emphasis is placed on the study of the extremities, particularly the hand.

### ANAT 529 Advanced Functional Neuroanatomy (Occupational Therapy)

2 lecture and 2 laboratory hours. 3 credits. Prerequisites: ANAT 525 and permission of instructor. A study of the morphological and functional aspects of the central and peripheral nervous systems of the human body with particular emphasis on motor activity.

### ANAT 609 Gross and Developmental Anatomy

Semester course; 4 lecture and 10 laboratory hours. 9 credits. A dissection and macroscopic study of the human body, with clinical correlations.

### ANAT 610 Neuroanatomy

Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the structure, connections and function of the central nervous system. Laboratory sessions complement lecture presentations, emphasizing light microscopic and ultrastructural neurohistology, gross and sectional anatomy of the brain, and tracing of functionally related CNS connections.

### ANAT 611 Histology

Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the basic light and electron microscopic structure of cells, tissues, and organs. Emphasis on correlating structure with function.

### ANAT 613 Advanced Studies in Anatomy

1-6 credits. An in-depth study in specific areas of anatomy: histology, gross anatomy, and neuroanatomy.

### ANAT 615 Topics in Cell Biology

Semester course; 2 lecture hours. 2 credits. A topical approach to current areas of interest in mammalian cell and molecular biology.

### ANAT 690 Anatomy Research Seminar

1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology.

### ANAT 691 Special Topics in Anatomy

1-4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of research.

### ANAT 697 Directed Research in Anatomy

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## Department of Biochemistry

Abraham, Donald, Professor (Chair, Medicinal Chemistry)\* [Biomedical Engineering]\*  
Ph.D. Purdue University  
X-ray crystallography and drug design.

Barbour, Suzanne E., Associate Professor (Microbiology and Immunology)\*  
Ph.D. Johns Hopkins University School of Medicine  
Regulation of cell phospholipid metabolism, phospholipase A.

Beckman, Matthew J., Assistant Professor  
Ph.D. Iowa State University  
Regulation of calcium homeostasis.

Broga, Dean W., Associate Professor (Environmental Health/Safety)\*  
Ph.D. University of Virginia  
Nuclear engineering (radiation protection).

Chalfont, Charles E., Assistant Professor  
Ph.D. University of South Florida  
Regulation of prostaglandin synthesis by bioactive lipids, regulation of alternative splicing.

Chlebowski, Jan F., Professor [Chemistry and Biomedical Engineering]†  
Ph.D. Case Western Reserve University  
Biosynthesis and regulation of enzyme structure and function.

Clore, John N., Associate Professor (Internal Medicine – Endocrinology)\*  
M.D. Virginia Commonwealth University  
Diabetes mellitus, regulation of glucose production.

Deb, Sumitra, Professor  
Ph.D. University of Calcutta  
Molecular cancer etiology.

Deb, Swati, Associate Professor  
Ph.D. University of Calcutta  
Oncoprotein regulation of cell growth.

DeLorenzo, Robert, Professor (Neurology) [Pharmacology and Toxicology]†  
M.D./Ph.D. Yale University.

Dent, Paul, Associate Professor (Radiation Oncology)\*  
Ph.D. Dundee, Scotland  
Signaling processes which regulate proliferation of normal liver cells in regenerating liver.

Diegelmann, Robert F., Professor [Surgery]\*  
Ph.D. Georgetown University  
Biochemistry of extra-cellular matrix metabolism during tissue repair.

Fang, Xianjun Frank, Assistant Professor  
Ph.D. University of Toronto  
Bioactive lipid signaling in ovarian, breast and prostate cancer.

Franson, Richard, Professor (Director, Office of Technology Transfer)\*  
Ph.D. Bowman Gray School of Medicine  
Phospholipid metabolism, phospholipases A2.

Gil, Gregorio, Associate Professor  
Ph.D. University of Barcelona  
Transcriptional regulation of cholesterol and bile acid metabolism.

Graham, Martin F., Professor (Pediatrics)\*  
M.D. University of Cape Town  
Smooth muscle cell biology, fibrosis.

Grant, Steven, Professor (Internal Medicine – Hematology/Oncology)\* [Microbiology and Immunology, Pharmacology and Toxicology]\*  
M.D. Mt. Sinai School of Medicine  
Signal transduction and apoptosis.

Grogan, W. McLean, Professor  
Ph.D. Purdue University  
Lipid metabolism in differentiation and transformation.

Hawkrige, Fred M., Professor and Chair (Chemistry)\*  
Ph.D. University of Kentucky  
Analytical chemistry, bioenergetics and bioelectrochemistry and heme protein electron transfer reactions.

Holmes, Walter M., Professor (Microbiology and Immunology)\*  
Ph.D. University of Tennessee, School of Medicine  
Protein nucleic acid interactions, RNA polymerase promoter interactions, RNA modifications.

Hylemon, Phillip B., Professor (Microbiology and Immunology)\*  
Ph.D. Virginia Polytechnic Institute and State University  
Regulation of bile acid biosynthesis, cell signaling, bile acid metabolism by intestinal bacteria.

Kirby, Donald F., Professor (Internal Medicine – Gastroenterology)\*  
M.D. George Washington University  
Gastroenterology and nutrition.

Milstien, Sheldon, Professor  
Ph.D. University of Southern California  
Enzymatic mechanisms in genetic disorders of aromatic amino acid metabolism; sphingolipid metabolites in nitric oxide production, neuronal development and apoptosis.

Peterson, Darrell L., Professor  
Ph.D. University of Notre Dame  
Structure of hepatitis B surface antigen proteins.

Roeser, James R., Assistant Professor  
Ph.D. University of Virginia  
RNA-protein interactions and regulation of gene expression.

Sato-Bigbee, Carmen, Assistant Professor  
Ph.D. Buenos Aires University, Argentina

Signal transduction systems and gene regulation in cell differentiation.

Scarsdale, Neel, Assistant Professor  
Ph.D. Yale University  
Nuclear magnetic resonance spectroscopy and macromolecular structure.

Schirch, Verne G., Professor  
Ph.D. University of Michigan  
Properties of enzymes involved in one-carbon metabolism.

Shelton, Keith R., Professor  
Ph.D. University of Illinois  
Role of stress proteins in formation of lead-induced nuclear inclusion bodies.

Spiegel, Sarah, Professor and Department Chair  
Ph.D. The Weizman Institute of Science  
Role of sphingolipid metabolites in proliferation, differentiation and signal transduction.

Tombes, Robert M., Assistant Professor (Biology)\*  
Ph.D. University of Washington  
Protein kinase activity in tumor biology and apoptosis.

Valerie, Kristoffer, Professor (Radiation Oncology)\*  
Ph.D. Royal Institute of Technology, Stockholm, Sweden  
Molecular biology of DNA repair and HIV 1 gene expression, radiation-induced gene expression and signal transduction mechanisms.

Van Antwerpen, Rik, Assistant Professor  
Ph.D. University of Utrecht, The Netherlands  
Structure and function of serum lipoproteins.

Van Tuyle, Glenn C., Associate Professor  
Ph.D. Thomas Jefferson University  
Mitochondrial DNA metabolism, RNA processing.

Wright, H. Tonie, Professor  
Ph.D. University of California at San Diego  
Protein and nucleic acid structure by X-ray crystallography.

Yager, Dorne, Assistant Professor (Surgery)\*  
Ph.D. University of North Carolina  
Biochemical mechanisms in fetal and adult wound repair.

Zehner, Zendra E., Professor  
Ph.D. Baylor College of Medicine  
Regulatory signals governing gene expression, mRNA localization, translation control.

- \* Department in parentheses indicates primary appointment.  
+ Department in brackets indicates affiliate appointment.

## Graduate courses in biochemistry (BIOC)

### BIOC 501 Biochemistry (Dentistry)

Semester course; 5 lecture hours plus clinical correlations. 3 credits. Prerequisite: Organic chemistry, three credits of physical chemistry, or permission of instructor. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as part of the fundamental background of modern dentistry. Four clinical correlation workshops complement the lecture presentations.

### BIOC 502 Biochemistry (Medicine)

Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students accepted in the School of Medicine. An introduction of structural biochemistry, intermediary metabolism, cell biology and methods of biochemical analysis as part of the fundamental background of modern medicine.

### BIOC 503-504/MICR 503-504 Biochemistry, Cell and Molecular Biology

Continuous course; 5 lecture hours. 5 credits. Prerequisites: Undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

### BIOC 505-506 Experimental Biochemistry

Continuous course; 4 laboratory hours. 2 credits. Prerequisite: BIOC 503 (or concurrent) or equivalent quantitative chemistry. Laboratory work, including theory and practice of advanced biochemical research methods.

### BIOC 507-508 Bioorganic Chemistry

Continuous course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. Study of structure, chemistry, and mechanism of small, biologically important molecules.

### BIOC 509 Biophysical Chemistry

Semester course; 3 lecture hours. 2 credits. Study of major physical/chemical concepts of biological organization with emphasis on self-assembly and dynamic interactions of biological structures.

### BIOC 510 Radiation Safety

Semester course offered on a demand basis (2-4 times or approximately 20 students per year); 15 lecture hours. 1 credit. Provides basic principles for the safe use of radioactive materials in biological research and meets the minimum training requirements set forth for responsible investigators in the university's Nuclear Radiation License.

### BIOC 523-524 Biochemistry (Pharmacy)

Continuous course; 2-3 lecture hours. 2-3 credits. Prerequisites: CHEM 301-302 or equivalent. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as a part of the fundamental background of modern pharmacy.

### BIOC 601 Membranes and Lipids

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOC 503-504. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, reconstituted systems, and signal transduction.

### BIOC 602 Physical Properties of Macromolecules

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOC 503-504 and physical chemistry. Physicochemical approaches to the determination of the structure and conformation of macromolecules.

### BIOC 604 Enzymology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOC 503-504. Physical and chemical properties and mechanisms of action of enzymes.

Treatment of chemical catalysis, enzyme kinetics, and correlation of enzyme structure to mechanisms.

**BIOC 605 Molecular Biology**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Undergraduate chemistry or biochemistry. Nucleic acid structure, genetic code, DNA replication, transcription, translation; structure and properties of self-assembling systems: viruses, ribosomes, cytoskeletal proteins, and membranes.

**BIOC 606 Biochemical Control Processes**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: BIOC 503-504 and permission of instructor. An advanced course on aspects of control mechanisms at the molecular level.

**BIOC 610 Current Trends in Biochemistry**

Semester course; 2 lecture hours. 2 credits.  
Prerequisites: BIOC 503-504. A study and literature review of common and complex biochemical substances using recent research methodology.

**BIOC 690 Biochemistry Seminar**

Semester course; 1 credit. Reports on recent biochemical literature and research by students and staff.

**BIOC 691 Special Topics in Biochemistry**

Semester course; 1-4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

**BIOC 697 Directed Research in Biochemistry**

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## Department of Biostatistics

Archer, Kellie J., Assistant Professor

Ph.D. Ohio State University  
Microarray data analysis, statistical computing, logistic regression.

Bauer, David F., Professor (Mathematical Sciences)\*

Ph.D. University of Connecticut  
Nonparametric statistics.

Best, Al M., Associate Professor [School of Dentistry]<sup>†</sup>

Ph.D. Virginia Commonwealth University  
Design and analysis of multivariate experiments, data management, graphical methods.

Boyle, Russell M., Assistant Professor

M.S. University of Akron  
Clinical trials, data management.

Carchman, Richard A., Professor (Philip Morris)\*

Ph.D. State University of New York, Downstate Medical Center  
Cyclic nucleotide metabolism in malignant transformation, macrophage function, toxicology.

Carter Jr., Walter H., Professor and Department Chair

[Internal Medicine, Pharmacology and Toxicology]<sup>†</sup>  
Ph.D. Virginia Polytechnic Institute and State University  
Design and analysis of response surface experiments, clinical trials, toxicology.

Chinchilli, Vernon M., Professor (Hershey Medical Center)\*

Ph.D. University of North Carolina at Chapel Hill

Multivariate analysis, clinical trials and nonparametric statistics, toxicological experiments.

Choi, Sung C., Professor [Neurosurgery]<sup>†</sup>

Ph.D. University of California at Los Angeles  
Multivariate biostatistics, sequential analysis, design and analysis of clinical trials.

Dawson, Kathryn S., Assistant Professor

Ph.D. Virginia Commonwealth University  
Clinical trials methodology, analysis of drug interactions, multivariate analysis.

Elswick, R. K., Associate Professor [School of Nursing]<sup>†</sup>

Ph.D. Virginia Commonwealth University  
Equivalence testing, mixed linear model methodology, multivariate analysis, sample size and power methodology, clinical trials.

Flora, Roger E., Associate Professor (Pharmaceutical Research Associates, Inc.)\*

Ph.D. Virginia Polytechnic Institute and State University  
Design and analysis of clinical trials, multivariate analysis.

Gennings, Chris, Professor

Ph.D. Virginia Commonwealth University  
Nonlinear regression modeling, categorical data analysis, analysis of complex mixtures, statistical issues in mixture toxicology.

Johnson, Robert E., Associate Professor [Family Practice]<sup>†</sup>

Ph.D. University of North Carolina at Chapel Hill  
Linear models, survey sample theory, statistical computing.

Kilpatrick, S. James, Professor Emeritus

Ph.D. Queen's University of Belfast  
Health services research, epidemiology.

Kish Jr., Charles W., Assistant Professor (Wyeth)\*

Ph.D. Virginia Commonwealth University  
Design and analysis of clinical trials, multivariate analysis, response surface methodology, software design and statistical computing.

Ko, Daijin, Professor

Ph.D. University of Washington  
Robust statistics, survival analysis, nonparametric regression, directional data.

McClish, Donna K., Associate Professor [Internal Medicine]<sup>†</sup>

Ph.D. University of North Carolina at Chapel Hill  
Statistical methods in epidemiology, applied stochastic processes, health services research.

Minton, Paul D., Professor Emeritus

Ph.D. North Carolina State University  
Distributions and models for biomedical applications.

Peace, Karl E., Professor (Director, Center for Biostatistics, Georgia Southern University)\*

Ph.D. Virginia Commonwealth University  
Survival analysis, design and analysis of clinical trials.

Penberthy, Lynne T., Assistant Professor (Massey Cancer Center)\*

M.D. University of Michigan  
Data linkage and analysis of health services research, cancer treatment and control, epidemiology.

Ramakrishnan, Viswanathan, Associate Professor

Ph.D. Florida State University  
Correlated categorical data analysis, bioinformatics.

Shaw, James E., Assistant Professor (Internal Medicine)\*

M.D./M.P.H. University of California at Los Angeles  
Epidemiology, clinical research.

Smith, Wally R., Associate Professor (Internal Medicine)\*

M.D. University of Alabama  
Clinical epidemiology, quality health care, clinical research.

\* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

## Graduate courses in biostatistics (BIOS)

**BIOS 513-514/STAT 513-514 Mathematical Statistics I-II**

Continuous course; 3 lecture hours. 3-3 credits.  
Prerequisite: MATH 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

**BIOS 516 Biostatistical Consulting**

Semester course; 1 lecture hour. 1 credit. The principles dealing with the basic art and concepts of consulting in biostatistics. The nonstatistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

**BIOS 523/STAT 523 Nonparametric Statistical Methods**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two- and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables and coefficients of association.

**BIOS 524 Biostatistical Computing**

Semester course; 3 lecture hours. 3 credits. The Statistical Analysis System (SAS) is both a powerful computer language and a large collection of statistical procedures. Students learn how to create and manage computer data files. Techniques for thorough examination and validation of research data are presented as the initial step of a complete, computerized analysis. Descriptive statistics are computed and statistical procedures such as t-tests, contingency tables, correlation, regression, and analysis of variance then applied to the data. Special attention is paid to the applicability of each procedure. Students are encouraged to analyze their own or typical data from their discipline.

**BIOS 530 Elements of Biometry**

Semester course; 5 lecture hours weekly during January and February. 2 credits. For dental and medical fellows; graduate students with consent. Concepts of biostatistics and epidemiology. Summary statistics and tables. Normal distribution and statistical association.



Chi-square tests, t-tests, Wilcoxon test, and other tests. Sensitivity, specificity, odds ratios, and related topics. Clinical trials, prospective and retrospective studies, and other miscellaneous topics in biostatistics and epidemiology.

### **BIOS 531 Clinical Epidemiology**

Semester course; 3 lecture hours. 3 credits. This course is intended primarily for clinicians. Permission of the course coordinator is required for others interested in registering. Epidemiological concepts necessary for evidence based studies of medicine. Specific topics will include: cause and effect criteria, demographic rates, measures of association or effect, study designs, decision trees, meta-analysis, evaluation of the literature, sources of data, reliability and validity, bias, confounding and effect modification, screening and diagnostic tests, sensitivity, specificity, false positives, false negatives, applications of the above to diagnosis and treatment, treatment efficacy and improved patient care.

### **BIOS 543/PMCH 543/STAT 543 Statistical Methods I**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling, and sampling distributions; point estimation, confidence intervals, and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance, and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

### **BIOS 543, 544/STAT 543, 544/PMCH 543 Statistical Methods I, II**

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: Graduate standing or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit.

### **BIOS 544/STAT 544 Statistical Methods II**

Semester course; 3 lecture hours. 3 credits. Prerequisite: One of the following: STAT 314, 541, 543 or equivalent. Advanced treatment of the design of experiments and the statistical analysis of experimental data using analysis of variance (ANOVA) and multiple-regression. Includes the use of a statistical software package for data analysis.

### **BIOS 546 Linear Models**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 513 and 543/553. Distribution of quadratic forms under normal theory; general linear model of full rank and less than full rank, Gauss-Markov theorem; estimability.

### **BIOS 553-554 Applied Statistics**

Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: MATH 200-201 or equivalent and one previous course in statistics and permission of instructor. Introduces applied statistics of biostatistics intended primarily for graduate students in the Department of Biostatistics. Reviews elementary probability, theory and frequency distributions, sampling theory, principles of inference, one and two sample problems. ANOVA. Principles of experimental design. Variance components. Multiple comparison procedures. Block designs and Latin Squares. Nested ANOVA. Multiway ANOVA. Correlation and regression analysis. Multiple regression. Nonlinear regression. ANCOVA. MANOVA. Repeated measures.

### **BIOS 571 Clinical Trials**

Semester course; 3 lecture hours. 3 credits. Concepts of data management and statistical design and analysis in single-center and multicenter clinical trials. Data management topics include the collection, edition, and validation of data. Statistical design topics include randomization, stratification, blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

### **BIOS 572 Statistical Analysis of Biomedical Data**

Semester course; 3 lecture hours. 3 credits. Statistical methodology for data sets frequently encountered in biomedical experiments. Topics include analysis of rates and proportions, epidemiological indices, frequency data, contingency tables, logistic regression, life-tables and survival analysis.

### **BIOS 581 Applied Multivariate Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 544 or 554. Focuses on multivariate statistical methods, including Hotelling's T-square, MANOVA, multivariate multiple regression, canonical correlation, discriminant analysis, partially and blocking, multivariate outliers, components and factor analysis, and GMANOVA. Presumes the material in BIOS 543-544 or BIOS 553-554, including a matrix approach to multiple regression.

### **BIOS 615-616 Advanced Inference**

Continuous course; 4 lecture hours. 4 credits. Prerequisites: BIOS 514 and MATH 508, or permission of instructor. Mathematical preliminaries: probability and measure; integration; modes of convergence. Decision theoretical approach to statistical inference; decision rules; admissibility. Bayes and minimax procedures, invariance; complete classes. Point estimation; unbiasedness; efficiency; M, L, and R estimators; U statistics. Hypothesis testing: the Neyman-Pearson theory; unbiasedness and invariant tests; conditional tests; permutation tests; rank tests; likelihood based tests. Interval estimation; confidence sets; relationship between confidence sets and families of tests; unbiased and invariant confidence sets. Asymptotics; stochastic convergence; statistical limit theorems; ARE; asymptotic likelihood based procedures. Overview of robust statistical procedures.

### **BIOS 625 Analysis of Categorical Data**

Semester course; 4 lecture hours. 4 credits. Prerequisites: BIOS 514, 554 and 572. Introduction to the theory and methods of analysis of binomial and multinomial data. Topics include exact and asymptotic analysis of contingency tables; measures of association and agreement; modeling approaches including logistic

regression, loglinear models, tests; invariance, MANOVA, GMANOVA, and multiple design models, non-parametric methods; inference with covariance matrices; principal components; factor analysis; discriminant analysis; clustering; multidimensional scaling.

### **BIOS 631-632 Multivariate Analysis**

Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: BIOS 514, 546, and 554. Introduction to the theory and methods of multivariate analysis; distributions; partial, multiple, and economical correlations; maximum likelihood and decision theoretical estimation; one-and two-sample tests; invariance: MANOVA, MANCOVA, GMANOVA, and multiple design models, non-parametric methods; inference with covariance matrices; principal components; factor analysis; discriminate analysis; clustering; multidimensional scaling.

### **BIOS 638-639 Statistical Design and Analysis in Toxicology**

Continuous course; 3 lecture hours. 3-3 credits. Prerequisites for BIOS students: BIOS 514 and 554. Prerequisite for non-biostatistics students (who can enroll on a Pass/Fail basis): BIOS 554. Classical bioassay, dose-response relationships, continuous and quantal data; probit and logit analysis; estimation of the ED50; combination experiments; low dose extrapolation and risk assessment; carcinogenicity, mutagenicity, and teratogenicity screening; overview of laboratory and experimental problems for the toxicologist. Non-biostatistics students may enroll on a pass/fail basis.

### **BIOS 647 Survival Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. The analysis of survival (or failure time) data, with/without censoring. Actuarial and life-table methods, nonparametric and parametric estimation of survival functions, and comparison of survival curves; regression methods, such as the Cox proportional hazards model; competing risks; sequential models; applications to clinical trials.

### **BIOS 650 Design and Analysis of Response Surface Experiments**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 546 and 554. Philosophy, terminology, and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analyses, description of the response surfaces, rotatability, uniform information designs, central composite in design, and modern design criteria.

### **BIOS 655 Quantitative Epidemiology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 554 and 572. Examines the quantitative aspects of epidemiological research. Includes causality in epidemiological research; the design, analysis, and interpretation of cohort and case-control studies; bias, confounding, and misclassification, matching, stratification, and adjusting of covariates; generalized linear models in epidemiological research, goodness-of-fit tests, and goodness-of-link tests.

### **BIOS 660 Sequential Analysis and Advanced Design and Analysis of Clinical Trials**

3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. Sequential methods versus fixed sample methods; the sequential probability ratio test with extensions and modifications; some applications of Cox's theorem; overview of analysis of clinical trials; closed and truncated tests; group sequential tests in clinical trials;

sequential monitoring; sequential estimation; other topics with emphasis in clinical trials.

### BIOS 667 Advanced Data Analysis

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: BIOS 514 and 554. Explores recently developed data analysis techniques to find the main features and underlying structure of data. Includes robust methods, bootstrap, linear model diagnostics, cross validation, nonparametric regression, optimal transformation, ACE algorithm, projection pursuit regression.

### BIOS 690 Biostatistical Research Seminar

Semester course; 1 lecture hour. 1 credit. Talks by the students, faculty, and visitors describing recent research or reviewing topics of mutual interest.

### BIOS 691 Special Topics in Biostatistics

Semester course; lecture and laboratory hours by arrangement. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized biostatistical procedures not available in other courses or as part of the research training.

### BIOS 697 Directed Research in Biostatistics

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## Department of Human Genetics

Black, Susan, Assistant Professor (Fairfax Hospital)\*  
M.D. McGill University  
Clinical genetics.

Blanton, Susan H., Associate Professor (University of Virginia)\*  
Ph.D. Virginia Commonwealth University

Bodurtha, Joann, Professor (Pediatrics and Obstetrics)\*  
M.D., M.P.H. Yale University  
Clinical genetics, epidemiology, birth defects, cancer genetics, genetic counseling.

Chen, Xiangning (Sam), Assistant Professor (Psychiatry)\*  
Ph.D. University of Houston  
Molecular genetics.

Corey, Linda A., Professor [Dentistry]\*  
Ph.D. North Carolina State University  
Genetic epidemiology and twin studies.

Eaves, Linton J., Distinguished Professor [Psychiatry]\*  
Ph.D., D.Sc., University of Birmingham  
Behavior and quantitative genetics.

Foley, Debra L., Assistant Professor  
Ph.D. LaTrobe University  
Epidemiology and psychiatric genetics.

Ginder, Gordon D., Professor (Internal Medicine)\*  
(Director, Massey Cancer Center)  
M.D. Johns Hopkins University  
Internal medicine, hematology and oncology.

Holmes, W. Michael, Associate Professor (Microbiology and Immunology)\*  
Ph.D. University of Tennessee  
Molecular genetics, nucleic acid chemistry.

Holt, Shawn E., Assistant Professor (Pathology)\*  
[Pharmacology and Toxicology, Massey Cancer Center]\*  
Ph.D. Texas A&M University

Role of telomerase and telomere biogenesis in aging and cancer.

Jackson-Cook, Colleen, Associate Professor (Pathology)\*, [Obstetrics and Gynecology]\*  
Ph.D. Virginia Commonwealth University  
Clinical and molecular cytogenetics, Down syndrome, aging and acquired chromosomal changes, gametic aneuploidy, prostate cancer, ovarian cancer.

Kendler, Kenneth S., Professor (Psychiatry)\*  
M.D. Stanford University  
Human behavioral, psychiatric and drug abuse.

Lloyd, Joyce, Associate Professor  
Ph.D. Wesleyan University (CT)  
Eucaryotic molecular biology, developmental regulation of the globin genes.

Maddelena, Anne, Assistant Professor (Genetics and IVF Institute)\*  
Ph.D. University of Michigan  
Molecular genetics.

Maes, Hermine H. M., Assistant Professor [Massey Cancer Center]\*  
Ph.D. Catholic University of Leuven  
Statistical genetics and genetic epidemiology.

Miles, Donna R., Assistant Professor  
Ph.D. University of Colorado at Boulder  
Behavioral genetics.

Nance, Walter E., Professor [Pediatrics, Internal Medicine Otolaryngology]\*  
M.D. Harvard University  
Ph.D. University of Wisconsin  
Clinical genetics, twin studies and hereditary deafness.

Neale, Michael, Professor (Psychiatry)\*  
Ph.D. University of London  
Behavioral genetics.

O'Connell, Peter, Professor and Chair  
Ph.D. Brandeis University  
Genetic linkage mapping, positional cloning of disease genes, genetic profiling of breast cancer.

Pallante, Virginia A., Instructor  
M.S. Virginia Commonwealth University  
Genetic counseling, education in genetics.

Pandya, Arti, Assistant Professor [Pediatrics]\*  
M.D. University of Bombay  
Clinical and molecular genetics.

Riley, Brien, Assistant Professor (Psychiatry)  
Ph.D. St. Mary's Hospital Medical School, Imperial College, London  
Molecular genetics.

Shiang, Rita, Assistant Professor  
Ph.D. University of Iowa  
Molecular genetics.

Shulman, Joseph D., Professor (Fairfax Hospital)\*  
M.D. Harvard Medical School  
Reproductive biology.

Silberg, Judy L., Assistant Professor [Psychiatry]\*  
Ph.D. Virginia Commonwealth University  
Behavior genetics, psychology, twin studies, adolescent behavior, genetic counseling.

Stern, Harvey J., Assistant Professor (Fairfax Hospital)\*  
M.D. Albert Einstein College of Medicine  
Ph.D. College of Physicians and Surgeons of Columbia University  
Clinical genetics.

Vanner-Nicely, Lauren, Instructor  
M.S. University of Pittsburgh  
Genetic counseling.

Ware, Joy L., Professor (Pathology)\*  
Ph.D. University of North Carolina at Chapel Hill  
Tumor metastasis, cell and molecular biology of human prostate cancer.

Windle, Jolene, Associate Professor  
Ph.D. John Hopkins University School of Medicine  
Molecular biology.

\* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

## Graduate courses in human genetics (HGEN)

### HGEN 501/BIOL 530 Human Genetics

Semester course; 3 credits. Prerequisites: BIOL 310 and CHEM 301, 302 and CHEZ 301L, 302L or equivalents. Emphasizes a broad approach, at an advanced level, to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn errors of metabolism, neonatal screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis and genetic counseling.

### HGEN 502 Advanced Human Genetics

Semester course; 2-6 lecture hours. 2-6 credits.  
Prerequisite: HGEN 501 or equivalent. For human genetics graduate students only. A comprehensive study of the principles of specific areas in human genetics.

### HGEN 511 Human Cytogenetics

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: HGEN 501 and HGEN 502. A discussion of recent advances in human cytogenetics. Topics covered will include chromosome banding techniques and ultrastructure, meiosis, numerical and structural abnormalities, fragile sites, cancer cytogenetics, methodology for linkage studies, and population cytogenetics. Clinical cases are used to illustrate the application of special diagnostic methodologies.

### HGEN 516/BIOL 516 Population Genetics

Semester course; 3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms.

### HGEN 518 Methods in Human Population Genetics

Semester course; 3 lecture hours. 3 credits. Data analysis and discussion of methods including segregation analysis and linkage. Topics covered will include inbreeding, ascertainment, and genetic epidemiology.

### HGEN 525-526 Practice of Genetic Counseling

Continuous course; 3 lecture hours. 3-3 credits.  
Provides context for practice of genetic counseling through literature review and practical techniques. Places specific emphasis on pregnancy and childhood evaluation, interviewing techniques, social and ethical issues, including fieldwork in prenatal, general genetics and specialty clinics.

### HGEN 527-528 Medical Genetics

Continuous course; 3 lecture hours. 3-3 credits.  
Provides medical information and principles of human genetic disease with specific emphasis on the molecular basis of Mendelian disorders, disorders of sexual development, assessment of dysmorphic features, and the genetics of common diseases. Emphasizes the use of all available resource materials in genetics.

### HGEN 531 Dental Genetics

Semester course; 1 lecture hour. 2 credits. The basis of inheritance and variation in man, including simple and complex modes of inheritance, the nature of mutations, human chromosomal aberrations, variation in protein and antigens, genetic aspects of some syndromes, and birth defects.

### HGEN 600 Clinical Genetics

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: HGEN 501 or equivalent. Practical experience in the genetic counseling clinic and on ward rounds. Includes collection and analysis of family histories, genetic counseling, and introduction to genetic nosology.

### HGEN 603 Mathematical and Statistical Genetics

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: BIOS 543-544 or equivalent. Provides an introduction to the rudiments of theoretical and applied mathematical population genetics including the segregation of genes in families, genetic linkage and quantitative inheritance. Emphasizes the methods used in the analysis of genetic data.

### HGEN 614 Human Biochemical and Molecular Genetics

Semester course; 4 lecture hours. 4 credits.  
Prerequisites: BIOC 503-504, equivalent, or permission of instructor. Surveys the mechanisms and varieties of human gene mutations resulting in human genetic disease and emphasizes different investigational disorders using current scientific literature.

### HGEN 617 Genetic Analysis of Complex Traits

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Introductory biostatistics or permission of instructor. Introduces the theory and practice of analysis of complex human traits. Provides a solid grounding in the fundamental concepts, study designs and analytical strategies for this evolving and important area.

### HGEN 618 Advanced Segregation and Linkage Analysis

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: HGEN 617 or permission of instructor. Focuses on advanced topics related to segregation and linkage analysis. Presents alternatives to single major locus segregation patterns, advanced linkage analysis techniques such as multipoint mapping, and combined segregation and linkage analyses.

### HGEN 619 Quantitative Genetics

Semester course; 3 lecture hours. 3 credits. The effects of genes and environment on complex human traits with emphasis on: Genetic architecture and evolution; nongenetic inheritance; mate selection; developmental change; sex-effects; genotype-environment interaction; resolving cause from effect; design of genetic studies, statistical methods and computer algorithms for genetic data analysis.

### HGEN 620 Principles of Human Behavioral Genetics

Semester course; 3 lecture hours. 3 credits. The theory of genetic and nongenetic transmission considered in relation to the design, analysis, and interpretation of studies to identify the principal genetic and environmental causes of behavioral variation. Included will be analysis of intelligence, personality, social attitudes, and psychiatric disorders.

### HGEN 690 Genetics Research Seminar

Semester course; 1 lecture hour. 1 credit. Selected topics in genetics presented by students and staff.

### HGEN 691 Special Topics in Genetics

1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training.

### HGEN 697 Directed Research in Genetics

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## Department of Microbiology and Immunology

Archer, Gordon L., Professor (Medicine)\*

M.D. University of Virginia  
Staphylococcal genetics, antibiotic resistance in staphylococci.

Barbour, Suzanne E., Associate Professor

Ph.D. Johns Hopkins University School of Medicine  
Regulation of cell phospholipid metabolism, phospholipase A2, regulation of the immune response by lipid medications.

Bear, Harry D., Professor (Surgery)\*

Ph.D., M.D. Virginia Commonwealth University  
Tumor immunology.

Buck, Gregory A., Professor

Ph.D. University of Washington  
Genomics, eukaryotic gene expression and RNA processing, catalytic RNA, molecular pathogenicity of trypanosomes and *Pneumocystis carinii*.

Burns, James C., Professor (Oral Pathology)\*

D.D.S., Ph.D. Virginia Commonwealth University  
Herpes virology, cytomegalovirus and the etiology of Sjogren's syndrome, latency of virus infection in mice.

Cabral, Guy A., Professor

Ph.D. University of Connecticut  
The effect of environmental chemicals on virus infections, drugs of abuse and the immune system. Cytokines and microglia, Herpesvirus infections.

Califano, Joseph V., Assistant Professor (Periodontics)\*

D.D.S. Virginia Commonwealth University  
Ph.D. Virginia Commonwealth University  
Immunology and microbiology of periodontal diseases.

Christie, Gail E., Associate Professor

Ph.D. Yale University  
Protein-nucleic acid interactions in regulation of gene expression, role of bacterial viruses in microbial evolution and pathogenesis.

Climo, Michael, Associate Professor (Internal Medicine)\*  
M.D. University of Virginia

Mechanisms of vancomycin-resistance in staphylococcus aureus, novel treatments for staphylococcal infections.

Conrad, Daniel H., Professor

Ph.D. West Virginia University  
Mechanisms of immediate hypersensitivity, structure and function of IgE receptors.

Cornelissen, Cynthia N., Assistant Professor

Ph.D. University of Illinois  
Mechanisms of iron acquisition used by bacterial pathogens including the pathogenic *Neisseriae*.

Deb, Sumitra, Professor (Biochemistry and Molecular Biophysics)\*

Ph.D. University of Calcutta  
Molecular biology of the human tumor suppressor.

Deb, Swati Palit, Associate Professor (Biochemistry and Molecular Biophysics)\*

Ph.D. University of Calcutta  
Growth regulatory mechanisms of normal cells particularly the ones that are deregulated during oncogenesis.

Fisher-Stanger, Krista, Assistant Professor

(University of Richmond)  
Ph.D. Virginia Commonwealth University.

Formica, Joseph V., Associate Professor Emeritus

Ph.D. Georgetown University  
Pathogenesis, physiology and biological control of *agrobacterium tumefaciens*.

Ginder, Gordon D. Professor (Internal Medicine)\*

(Director Massey Cancer Center)  
M.D. Johns Hopkins University  
Internal medicine, hematology and oncology.

Grant, Steven, Professor (Medicine)\* [Pharmacology and Toxicology]\*

M.D. Mt. Sinai School of Medicine  
Cancer therapy mechanisms of apoptosis, sphingolipids.

Holmes, W. Michael, Professor [Human Genetics]\*

[Biochemistry and Molecular Biophysics]\*  
Ph.D. University of Tennessee  
Mechanisms of RNA modification, human mRNA localization and metabolism, regulation of tRNA multigene families.

Hsu, Hsiu-Sheng, Professor

Ph.D. University of Pennsylvania  
Host-parasite relationships and experimental pathology of bacterial infectious diseases.

Huff, Thomas F., Professor

Ph.D. University of Louisville  
Basic mechanisms of immediate hypersensitivity, mast cell differentiation, IgE regulation, proto-oncogenes and hematopoiesis.

Hylemon, Phillip B., Professor

Ph.D. Virginia Polytechnic Institute and State University  
Biochemistry and genetics of steroid metabolism by anaerobic gut bacteria, regulation of cholesterol and bile acid biosynthesis in the liver, enzymology and genetics of hydroxysteroid dehydrogenases.

- Jacobson, Eric S., Professor (Medicine)\*  
M.D. and Ph.D. University of Wisconsin  
Pathogenesis of cryptococcosis, genetic study of *Cryptococcus neoformans*.
- Kauma, Scott W., Associate Professor (Obstetrics and Gynecology)\*  
M.D. University of Wisconsin  
Maternal immunity to fetus, regulation of trophoblast proliferation/differentiation by cytokines and other stimuli.
- Kepley, Christopher L., Assistant Professor (Internal Medicine Division of Rheumatology, Allergy and Immunology)\*  
Ph.D. Virginia Commonwealth University  
Human mast cells and basophils and the role these cells play in allergic disease.
- Kitten, Todd, Assistant Professor (Philips Institute of Oral and Craniofacial Molecular Biology)\*  
Ph.D. The University of Texas Health Science Center at San Antonio  
Linear plasmid recombination and antigenic variation in a relapsing fever borrelia endocarditis caused by the viridans streptococci.
- Koertge, Thomas E., Associate Professor (Periodontics)\*  
D.M.D. Southern Illinois University  
Ph.D. University of Iowa  
Immunology of periodontal disease, secretory immunology.
- Krystal, Geoffrey D., Associate Professor (Medicine)\*  
M.D. University of Miami  
Ph.D. State University of New York at Stony Brook  
Molecular biology of oncogenes, transcription and RNA processing of the myc gene family.
- Lebman, Deborah A., Associate Professor  
Ph.D. University of Pennsylvania  
Regulation of human B cell development and cytokine expression.
- Lewis, Jania, Assistant Professor (Philips Institute of Oral and Craniofacial Molecular Biology)  
Ph.D. Virginia Commonwealth University  
Pathogenesis of periodontopathogen, *Porphyromonas gingivalis*.
- Loria, Roger M., Professor [Academic Pathology]<sup>†</sup>  
Ph.D. Boston University  
Host-virus interactions, up regulation of host immunity to combat infectious diseases, enteroviruses in diabetes mellitus, cardiovascular diseases and atherosclerosis, role of environmental factors, nutrition, lipids and pesticides on virus infections.
- Macrina, Francis L., Professor (Philips Institute of Oral and Craniofacial Molecular Biology)\*  
Ph.D. Syracuse University  
Genetic control of colonization and virulence in human indigenous microflora.
- Marciano-Cabral, Francine, Professor (Philips Institute of Oral and Craniofacial Molecular Biology)\*  
Ph.D. University of Connecticut  
Pathogenic protozoa, parasite-host interactions, parasite immunology, host resistance mechanisms.
- Marconi, Richard T., Associate Professor  
Ph.D. University of Montana  
Pathogenic spirochetes, molecular pathogenesis of the Lyme disease spirochetes, molecular evolution.
- Markowitz, Sheldon, Professor (Internal Medicine)\*  
M.D. Virginia Commonwealth University  
Bacteria genetics, molecular epidemiology, investigational chemotherapy, animal models of infection.
- McCoy, Kathleen L., Associate Professor  
Ph.D. University of Washington  
Regulation of immune responsiveness with emphasis on antigen processing and presentation.
- McVoy, Michael, Assistant Professor (Pediatrics)\*  
Ph.D. Virginia Commonwealth University  
Regulation of Herpes viral DNA packaging, cleavage and circularization to discover novel targets for antiviral intervention.
- Mikkelsen, Ross B., Professor (Department of Radiation Oncology)\*  
Ph.D. University of California at Santa Barbara  
Host-parasite interactions in malaria and Ca<sup>2+</sup>/pH homeostasis and growth control in tumor cells.
- Munro, Cindy, Associate Professor (Nursing)\*  
Ph.D. Virginia Commonwealth University  
Oral and systemic streptococcal infections of humans, viridans streptococcal endocarditis, oral health in critically ill and immunocompromised persons.
- Nagarkatti, Mitzi, Professor  
Ph.D. Defense R&D Establishment, Gwalior, India  
Virus induced changes in humoral and cell mediated immunity in experimental dengue virus infection.
- Nagarkatti, Prakash S., Professor (Pharmacology and Toxicology)\*  
Ph.D. Jiwaji University  
Immunotoxicology, immunopharmacology, tumor immunology and immunotherapy.
- Ohman, Dennis E., Professor and Department Chair  
Ph.D. Oregon Health Sciences University  
Molecular and genetic regulation of the pathogenesis of the bacterium, *Pseudomonas aeruginosa*.
- O'Neal, Charles H., Associate Professor  
Ph.D. Emory University  
Proteins and nucleic acids involved in cellular transformation, role of tRNA in metabolic control.
- Pettit, Denise, Assistant Professor (Division of Consolidated Laboratories, Commonwealth of Virginia)\*  
Ph.D. Virginia Commonwealth University.
- Povirk, Lawrence F., Associate Professor (Pharmacology and Toxicology)\*  
Ph.D. University of California at Berkeley  
zDNA damage and mutagenesis, DNA double strand break repair and genesis rearrangement in mammalian cells.
- Reynolds, Kevin, Associate Professor (Medicinal Chemistry)\*  
Ph.D. University of Southampton, Hants, England  
Biosynthesis of the polyether antibiotic monensin-A, studies on a rearrangement linking isobutyryl-CoA and n-butyryl-CoA.
- Rogers, Jeffrey D., Assistant Professor (Philips Institute of Oral and Craniofacial Molecular Biology)\*  
Ph.D., State University of New York at Buffalo  
D.D.S., Virginia Commonwealth University  
Genesis and dissemination of antibiotic resistance genes in the oral streptococci.
- Ryan, John J., Assistant Professor (Biology)\*  
Ph.D. Virginia Commonwealth University  
Molecular immunology, mediators of the allergic response, role of mast cells in allergic disease, effects of the Th2 cytokines interleukin-4 and interleukin-10 on mast cell function and activity.
- Schenkein, Harvey A., Professor (Periodontics)\*  
D.D.S., Ph.D. State University of New York at Buffalo  
Immunobiology of periodontal disease, complement and inflammatory mediators in periodontal disease.
- Schwartz, Lawrence B., Professor (Medicine, Division of Rheumatology, Allergy and Immunology)\*  
[Pathology]<sup>†</sup>  
Ph.D., M.D. Washington University  
Immunology and biochemistry of mast cells.
- Straus, David, Professor  
Ph.D. University of Wisconsin at Madison  
Molecular mechanism of T lymphocyte activation, molecular signaling, Src kinase activation..
- Taylor, Shirley M., Assistant Professor  
Ph.D. University of Southern California  
Regulatory mechanisms during cell differentiation identification and characterization of lineage determination genes and mechanisms controlling their expression, regulation of expression of folate-dependent enzymes.
- Tew, John G., Professor  
Ph.D. Brigham Young University  
Role of follicular dendritic cells in the immune response and the role of immune mechanisms in the pathogenesis of periodontal disease.
- Toney, Denise, Assistant Professor (Division of Consolidated Laboratories, Commonwealth of Virginia)\*  
Ph.D. Virginia Commonwealth University
- Valerie, Kristoffer, Associate Professor (Radiation Oncology)\*  
Ph.D. Royal Institute of Technology, Stockholm, Sweden  
Radiation-induced signal transduction and gene expression and DNA repair, genetic regulation of human immunodeficiency virus.
- Weymouth, Lisa, Associate Professor (Division of Consolidated Laboratories, Commonwealth of Virginia)\*  
Ph.D. University of Pennsylvania
- Whiteman, Leslie, Assistant Professor (Virginia Union University)\*  
Ph.D. Virginia Commonwealth University
- Wu, Fang-Sheng, Associate Professor (Biology)\*  
Ph.D. Michigan State University  
Genetic engineering, cell and tissue culture, regulation of gene expression, intracellular protein sorting and targeting, molecular and cellular biotechnology.
- Yager, Dorne R., Assistant Professor (Surgery)\*  
Ph.D. University of North Carolina, Chapel Hill  
Molecular virology, molecular biology of wound healing.

\* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

## Graduate courses in microbiology and immunology (MICR)

### MICR 503-504/BIOC 503-504 Biochemistry, Cell and Molecular Biology

Continuous course; 5 lecture hours. 5 credits.  
Prerequisites: Undergraduate organic and physical chemistry, or permission of the instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

### MICR 505 Immunobiology

Semester course; 3 lecture hours. 3 credits. A survey of immunobiology as a total host response to foreign agents, covering the nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, allergic reactions, tumor immunology, transplantation immunology, immunological diseases and immunogenetics.

### MICR 507 Techniques in Molecular Biology and Genetics

Semester course; 2 lecture hours. 2 credits.  
Prerequisite: BIOC/MICR 503-504 or equivalent, permission of instructor. Designed to give an overview of the techniques utilized in modern molecular biology. The principles underlying techniques such as plasmid and phage cloning, RNA and DNA analysis, PCR, DNA sequencing, mutagenesis, genomic mapping, heterologous gene expression, and production and analysis of recombinant protein and transgenic mouse technology will be discussed in detail by experts in the field.

### MICR 508-509 Introduction to Microbiology and Immunology Research

Continuous course; lectures and 4 laboratory hours. 3-3 credits. Prerequisite: Permission of instructor. Required of all first-year graduate students. Introduction to all active research programs in microbiology and immunology. Presentations of research programs by investigators and rotation of students through faculty laboratories to gain direct exposure to individual research projects.

### MICR 510 Scientific Integrity

Semester course; 1 lecture hour. 1 credit. A survey of contemporary issues relating to responsible conduct in research. Topics include academic integrity, mentoring, authorship and peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, collaborative research, research misconduct and genetic technology.

### MICR 512 Laboratory Safety

Semester course; 1 lecture hour. 1 credit. Describes health hazards commonly found in biomedical laboratories and their appropriate safety precautions, government regulations and emergency responses. Includes hazards of working with micro-organisms, experimental animals, and chemical, electrical and fire hazards.

### MICR 513 Infection and Immunity (Dentistry)

Semester course; 3.5 lecture hours. 3.5 credits. A lecture and laboratory study of the disease producing microorganisms of man with special emphasis on the roles of microorganisms in oral diseases and related topics that are of importance in dentistry.

### MICR 515 Principles of Molecular Microbiology

Semester course; 3 lecture hours. 3 credits. A comprehensive course designed to provide the student with a

thorough understanding of microbial physiology, genetics and diversity. Also covered are some basic concepts in microbial pathogenesis and in applied microbiology. The course focuses on structural and functional characteristics of micro-organisms; ecological and physiological diversity of microbes; growth and control of micro-organisms; genetics of bacteria and viruses; bacteria as agents of disease; and applications of microbiology.

### MICR 516 Mechanisms of Viral and Parasite Pathogenesis

Semester course; 3 lecture hours. 3 credits. A comprehensive introduction to the basic principles of virology and human parasitology. Interactions of the infecting agents and hosts will be stressed at the molecular and cellular level.

### MICR 518 Molecular Mechanisms of Bacterial Pathogenesis

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: Undergraduate-level courses in microbiology or microbial physiology, immunology and molecular genetics. The goals of this comprehensive course are to explore in detail the virulence mechanisms of microbes and the response of the infected host. The focus will be on important bacterial pathogens.

### MICR 605 Prokaryotic Molecular Genetics

Semester course; 2 lecture hours. 2 credits.  
Prerequisites: BIOC/MICR 503-504 and MICR 515 or permission of instructor. A comprehensive introductory course examining the organization of the genetic material in bacteria and their viruses and the molecular mechanisms involved in its maintenance, replication, exchange and expression. Emphasis will be on experimental approaches integrating classical and modern methods of genetic analysis with biochemical studies of genetic regulatory mechanisms.

### MICR 606 Molecular Biology and Genetics

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes the structure of the genetic material and the molecular mechanisms involved in its maintenance, replication, transmission and expression. Emphasis will be on experimental approaches integrating genetics and biochemistry in the studies of molecular genetics in prokaryotic and eukaryotic cellular and viral systems.

### MICR 653 Advanced Molecular Genetics: Bioinformatics

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MICR/BIOC 503 and 504, and permission of instructor. An advanced course on contemporary bioinformatics. Topics covered include the principles and practice of DNA, RNA and protein sequence analysis, computational chemistry and molecular modeling, expression array analysis and pharmacogenomics. The course includes lectures, reading, computer lab, homework problem sets and projects.

### MICR 654 Advanced Molecular Genetics – Bioinformatics

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MICR 605 or BIOC 605 and permission of instructor. An advanced course on the bioinformatics. Topics covered include the principles and practice of DNA, RNA and protein sequence analysis. The course includes lectures, readings, computer labs, homework problem sets and projects.

### MICR 686 Advanced Immunobiology

Semester course; 2 lecture hours. 2 credits. Open primarily to residents, medical students and graduate students with an immunology background such as MICR 505. Lectures, seminars and conferences on basic and clinical immunobiology. Topics have included tumor immunology, cell interactions in the immune response, genetics of the immune response, mechanisms of host-defense and membrane receptors in immunology and neoplasia.

### MICR 690 Microbiology Research Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminars.

### MICR 691 Special Topics in Microbiology

Semester course; 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

### MICR 692 Current Topics in Molecular Pathogenesis

Semester course; 1 lecture hour. 1 credit. Open to all graduate and certificate students. Presents a forum for the discussion of recent advances in the study of the molecular mechanisms of microbial pathogenesis. Consists of presentations by students, postdoctoral fellows and faculty followed by interactive discussions of the implications of presented work to the study of molecular pathogenesis.

### MICR 697 Directed Research in Microbiology

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

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## Department of Pathology

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Anderson, Philip F., Assistant Professor (Clinical Chemistry)\*

Ph.D. Virginia Commonwealth University  
Immunoassay development.

Ferreira-Gonzalez, A., Associate Professor  
Ph.D. George Washington University  
Molecular diagnostics.

Garrett, C. T., Professor (Division Chair, Molecular Diagnostics)\*

Ph.D. University of Wisconsin  
M.D. Johns Hopkins  
Molecular diagnostics.

Hadfield, M. Gary, Professor  
M.D. University of Utah

Neurotransmitter responses to aggressive behavior, stress, and psychoactive drugs, electron microscopy.

Holt, Shawn E., Assistant Professor [Human Genetics]\*  
Ph.D. Texas A&M University

Telomeres, telomerase in aging and cancer.

Jackson-Cook, Colleen, Assistant Professor (Human Genetics)\*

Ph.D. Virginia Commonwealth University  
Clinical, molecular and population cytogenetics,  
Down syndrome, sperm chromosome aneuploidy.

Miller Jr., W. Gregory, Professor

Ph.D. University of Arizona  
Fiber-optic immunochemical sensors for in vivo quantitative monitoring.

Pandya, Arti, Assistant Professor (Human Genetics)\*  
M.D. University of Bombay  
Clinical and molecular genetics.

Poklis, Alphonse, Professor (Pharmacology and Toxicology)<sup>†</sup>  
Ph.D. University of Maryland  
Forensic toxicology drug metabolism, analytical methods to detect drugs and intoxicants.

Robinson, Susan E., Professor (Pharmacology and Toxicology)\*  
Ph.D. Vanderbilt University  
Interactions between putative neurotransmitters and central cholinergic neurons, correlation between behavioral and biochemical effects of drugs, effect of prenatal exposure to drugs in developing neurotransmitters.

Rosenblum, William I., Professor Emeritus  
M.D. New York University  
Cerebral microcirculation, blood substitutes, endothelial injury.

Sirica, Alphonse E., Professor (Division Chair, Cell and Molecular Pathogenesis)\*  
Ph.D. University of Connecticut  
Hepatocarcinogenesis, pathobiology of liver neoplasms and biliary epithelium, intrahepatic biliary epithelial cell function, proliferation and differentiation, neoplastic transformation of biliary cells, hepatocyte and biliary ductal cell culture.

Ware, J. L., Professor and Director of Pathology Graduate Education [Human Genetics, Physiology and Surgery]<sup>†</sup>  
Ph.D. University of North Carolina  
Prostate cancer cell biology, invasion and metastasis.

Wilkinson, David S., Professor and Department Chair  
Ph.D. University of Wisconsin  
M.D. University of Miami  
Experimental oncology and pathology.

\* Department in parentheses indicates primary appointment.

† Department in brackets indicates secondary appointment.

## Graduate courses in pathology (PATH)

### PATH 521 Laboratory Techniques in Diagnostic Pathology

Semester course; 3 lecture hours. 3 credits. This team taught course includes principles of automated and non-automated testing, diagnostic testing, and an active laboratory demonstration of each method.

### PATH 522 Clinical Chemistry

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of instructor. The metabolic basis of disease and the interpretation of laboratory data for diagnosis and patient management.

### PATH 540 Pathology for Allied Health Sciences

Semester course; 1.5 lecture and 1 laboratory hour. 2 credits. Explores morbid tissue changes involved in selected disease states, with emphasis on muscu-

loskeletal and nervous systems. Provides the foundation to understanding clinical problems that physical therapists and other paramedical personnel will encounter and treat in their patients.

### PATH 570 Experimental Approaches to Tumor Biology

Semester course; 3 lecture/discussion hours. 3 credits. Introduces central problems in tumor biology and the methods available for their study. Develops through lectures and presentations skills in critical review and interpretation of research reports.

### PATH 590 Experimental Pathology Seminar

Semester course; 1 lecture hour. 1 credit.

### PATH 601 General Pathology (Dentistry)

Semester course; 6 lecture hours. 6 credits. Instruction in the basic principles regarding alteration of structure and function in disease and in the pathogenesis and effect of disease in the various organ systems.

### PATH 620 Special Topics in Modern Instrumental Methods

Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studies.

### PATH 690 Clinical Chemistry Seminar

Semester course; 1 lecture hour. 1 credit. Graduate students, residents, and staff present topics of current interest in clinical chemistry.

### PATH 691 Special Topics in Modern Instrumental Methods

Semester course; 1 lecture and 2 laboratory hours. 2 credits. By special arrangement with instructor. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studied.

### PATH 697 Research in Pathology

Semester course; 1-15 credits. Research leading to Ph.D. degree and elective research projects for other students.

## Department of Pharmacology and Toxicology

Abd-Elfattah, Anwar S., Associate Professor (Surgery)\*  
Ph.D. Mississippi State University  
Neuropharmacology and biochemical and toxicology of organophosphorus and organochlorine neuropoisons.

Aboud, Mary E., Associate Professor (California Pacific Medical Center)\*  
Ph.D. University of California at San Francisco  
Molecular pharmacology of opioids and cannabinoids.

Aceto, Mario D., Professor  
Ph.D. University of Connecticut  
Mechanisms of action of analgesics and psychotherapeutic agents, drug dependence.

Allen, Robert C., Professor and Department Chair (Ophthalmology)\*  
M.D. University of Virginia  
Glaucoma.

Balster, Robert L., Professor and Director, Center for Drug and Alcohol Studies (Psychology)\*  
Ph.D. University of Houston  
Animal models of drug dependence, behavioral pharmacology, behavioral toxicology, excitatory amino acids, inhalation studies.

Beardsley, Patrick M., Associate Professor (Psychology)\*  
Ph.D. University of Minnesota  
Behavioral pharmacology, development of medications for drug dependency disorders.

Borzelleca, Joseph F., Professor  
Ph.D. Thomas Jefferson University, Jefferson Medical College  
General toxicology, safety evaluation of pesticides and chemicals, water contaminants, effects of chemicals on reproduction, food chemicals, interactions of toxic agents.

Carter Jr., Walter H., Professor (Chair, Biostatistics)\* [Internal Medicine]<sup>†</sup>  
Ph.D. Virginia Polytechnic Institute and State University  
Design and analysis of response surface experiments, clinical trials, toxicology.

Churn, Severn B. Associate Professor (Neurology)\*  
Ph.D. Virginia Commonwealth University;  
Molecular mechanisms of receptor function in status epilepticus.

Cook, Charles D., Assistant Professor  
Ph.D. University of North Carolina at Chapel Hill  
Behavioral pharmacology, sex differences in drug-induced effects, pain, analgesia.

Damaj, M. Imad, Associate Professor  
Ph.D. University of Paris  
CNS pharmacology, cholinergic system, drugs of abuse, mechanisms of tolerance.

DeLorenzo, Robert J., Professor (Neurology)\*  
Ph.D., M.D. Yale University  
Neuroscience and molecular neurobiology, molecular bases of membrane excitability, neuropharmacology of neuroleptic drugs, biochemical bases of the effects of calcium on neuronal functions.

Dent, Paul, Assistant Professor (Radiation Oncology)\*  
Ph.D. University of Dundee, Scotland  
Growth factor signal transduction, cellular growth, development and differentiation within the liver.

Dewey, William L., Professor  
Ph.D. University of Connecticut  
Mechanism of action of the constituents of marijuana, narcotic analgesics and their antagonists, including the role of endogenous substances in these actions, sudden infant death, neurosciences.

Egle Jr., John L., Professor Emeritus  
Ph.D. West Virginia University  
Cardiovascular pharmacology, the arachidonic cascade, cerebral microcirculation, platelets, nonsteroidal anti-inflammatory agents, brain injury.

Ellis, Earl F., Professor  
Ph.D. Bowman Gray School of Medicine  
Cerebral blood flow and metabolism, brain injury, arachidonic acid metabolism, drugs of abuse.

- Gewirtz, David A., Professor [Internal Medicine]\*  
Ph.D. Mount Sinai School of Medicine  
Regulation of growth arrest and cell death pathways in the breast tumor cell in response to chemotherapy and radiation.
- Glennon, Richard A., Professor (Medicinal Chemistry)\*  
Ph.D. State University of New York at Buffalo  
Design, synthesis and evaluation of site-selective serotonergic agents, studies on drugs of abuse and on designer drugs.
- Grant, Steven, Professor (Internal Medicine, Division of Hematology and Oncology)\*  
M.D. Mt. Sinai School of Medicine  
Leukemic cell apoptosis, signal transduction, regulation of oncogene expression.
- Guo, Tai Liang, Assistant Professor  
Ph.D. Albany Medical College  
Immunotoxicology, molecular immunology, signal transduction.
- Harris, Louis S., Harvey Haag Professor  
Ph.D. Harvard University  
Relationship between chemical and biochemical factors and pharmacological actions of drugs affecting the central nervous system.
- Holt, Shawn E., Assistant Professor (Pathology)\* [Human Genetics]†  
Ph.D. Texas A&M University  
Role of human telomerase and telomere biogenesis in aging and cancer.
- Ishac, Edward J.M., Associate Professor  
Ph.D. Monash University  
Biochemical pharmacology/second messengers.
- Jacobs-Helber, Sarah M., Assistant Professor  
Ph.D. Virginia Commonwealth University  
Transcription factors, blood cell development, cancer biology.
- Kunos, George, Professor (Director, NIAAA Intramural Program/NIH)\*  
M.D. Budapest Medical University  
Ph.D. McGill University  
Molecular biology of adrenergic receptors, central mechanisms of blood pressure regulation, endogenous opioids.
- Lamb, Robert G., Professor [Medicine]\*  
Ph.D. University of North Carolina  
Hepatotoxicology, role of phospholipid metabolism in aging and chemical (alcohol, cocaine, CC14, etc.) dependent liver cell dysfunction, development of cytoprotective agents and in vitro models of agent-induced liver cell injury, liver cell culture.
- Lichtman, Aron H., Associate Professor  
Ph.D. Dartmouth College  
Neuronal mechanisms of cannabinoid action, pharmacology of antinociception, behavioral pharmacology, drugs of abuse.
- Martin, Billy R., Professor and Department Chair  
Ph.D. University of North Carolina  
Central nervous system pharmacology, drugs of abuse, drug metabolism.
- May, Everett L., Professor  
Ph.D. University of Virginia  
Medicinal chemistry, drug abuse.
- Miles, Michael F., Associate Professor  
M.D. Northwestern University  
Functional genomics approaches to experience dependent plasticity occurring with drug abuse.
- Moran, Richard G., Professor  
Ph.D. State University of New York at Buffalo  
Pharmacology and molecular biology of folate metabolism cancer cell biology.
- Nagarkatti, Mitzi, Professor (Microbiology and Immunology)\*  
Ph.D. Defense R&D Establishment, Gwalior, India  
Virus induced changes in humoral and cell mediated immunity in experimental dengue virus infection.
- Nagarkatti, Prakash S., Professor  
Ph.D. Jiwaji University  
Immunotoxicology, immunopharmacology, tumor immunology and immunotherapy.
- Nestler, John E., Professor (Chair, Endocrinology)\*  
M.D. University of Pennsylvania  
Insulin regulation of human steroid metabolism, dehydroepiandrosterone metabolism, biologic actions of dehydroepiandrosterone, breast cancer epidemiology, pathogenic role of insulin in breast cancer.
- Nicholson, Katherine L., Assistant Professor  
D.V.M. University of Georgia  
Ph.D. Virginia Commonwealth University  
Pharmacology of NMDA receptors.
- Poklis, Alphonse, Professor (Pathology)\*  
Ph.D. University of Maryland  
Analytical and forensic toxicology, drug metabolism, biological monitoring.
- Porter, Joseph H., Professor (Psychology)\* [Biology]†  
Ph.D. University of Georgia  
Biopsychology animal learning and behavior, behavioral pharmacology.
- Povirk, Lawrence F., Professor [Microbiology and Immunology]†  
Ph.D. University of California at Berkeley  
Mutagenic effects of DNA-directed cancer chemotherapeutic agents, mechanisms of DNA damage and repair, application of DNA sequence analysis to study mutational mechanisms.
- Ritter, Joseph K., Associate Professor  
Ph.D. University of Utah  
Toxicology and molecular biology of xenobiotic metabolizing enzymes in liver.
- Robinson, Susan E., Professor  
Ph.D. Vanderbilt University  
Interactions between putative neurotransmitters and central cholinergic neurons, correlation between behavioral and biochemical effects of drugs on developing neurotransmitter systems.
- Rosecrans, John A., Professor  
Ph.D. University of Rhode Island  
Psychopharmacology, correlations between the behavioral and biochemical effects on CNS-acting drugs, drug dependence, effects of drugs on adaptive mechanisms to chronic stress.
- Satin, Leslie S., Professor  
Ph.D. University of California at Los Angeles  
Physiology, biophysics and pharmacology of ion channels in endocrine and nerve cells, calcium channels, role of ion channels in pancreatic islet B-cells, role of calcium ions in secretion, channel modulation diabetes, neuronal injury and NMDA receptors.
- Sawyer, Stephen T., Professor  
Ph.D. University of Tennessee  
Erythropoietic receptors, biology of growth factors.
- Schmidt-Ullrich, Rupert K., Professor and Department Chair (Radiation Oncology)\*  
M.D. University of Heidelberg, Germany  
Head-and-neck cancer.
- Shelton, Keith L., Assistant Professor  
Ph.D. Virginia Commonwealth University  
Mechanisms underlying the reinforcing and discriminative stimulus effects of alcohol, preclinical development of cocaine abuse treatment medications, behavioral effects of abused solvents.
- Selley, Dana E., Assistant Professor  
Ph.D. University of Rochester  
G-protein-mediated signal transduction, biomedical neuropharmacology of psychoactive drugs, mechanisms of drug efficacy, tolerance and dependence.
- Sica, Domenic A., Professor (Internal Medicine, Division of Nephrology)\*  
M.D. Medical College of Virginia  
Hypertension, renal failure, electrolyte disorders and drug interactions.
- Sim-Selley, Laura, Assistant Professor  
Ph.D. Rochester  
Functional anatomy of G-protein-coupled receptors, neuropharmacology of psychoactive drugs, opiates, cannabinoids.
- Smith, Forrest L., Associate Professor  
Ph.D. Texas Tech University, Health Sciences Center  
Signal transduction cascades mediating opioid analgesia, tolerance and physical dependence; neonatal fentanyl tolerance and dependence; long-term consequences and drug intervention strategies.
- Tombes, Robert M., Assistant Professor (Biology)\*  
Ph.D. University of Washington  
Regulation of growth and differentiation by calcium, CaM and CaM-dependent protein kinases.
- Welch, Sandra P., Professor  
Ph.D. Virginia Commonwealth University  
Measurement of free intracellular calcium adenylate cyclase and other second messengers in the development of tolerance and physical dependence to opioids and cannabinoids.
- White Jr., Kimber L., Associate Professor (Biostatistics)\* [Biomedical Engineering]†  
Ph.D. Virginia Commonwealth University  
Immunotoxicology of polycyclic aromatic and chlorinated hydrocarbons, statistical methods in toxicology, complement, risk assessment.
- Wiley, Jenny L., Associate Professor  
Ph.D. Virginia Commonwealth University  
Psychopharmacology, behavioral pharmacology.
- Woods, Lauren A., Professor Emerita  
Ph.D. Iowa State University  
M.D. University of Michigan Medical School  
Narcotic metabolism and distribution.

\* Department in parentheses indicates primary appointment.

† Department in brackets indicates affiliate appointment.

## Graduate courses in pharmacology and toxicology (PHTX)

### PHTX 509/ANAT 509/PHIS 509 Introduction to Neuroscience

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

### PHTX 515 Pharmacology for Nurse Anesthetists I

Semester course; 3 lecture hours. 3 credits. The basic principles of pharmacology including mechanisms of absorption, distribution, biotransformation, elimination, dose-response relationships, drug and receptor interactions are presented followed by a detailed discussion of autonomic, cardiovascular, and renal pharmacology as it relates to nurse anesthesia. Detailed presentation of the pharmacology of classes of drugs used by nurse anesthetists will be made, with emphasis on general anesthetics.

### PHTX 516 Pharmacology for Nurse Anesthetists II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 515. Detailed presentation of the pharmacology of classes of drugs used or encountered by nurse anesthetists will be made with emphasis upon local anesthetics, cardiovascular, chemotherapeutic, and anti-inflammatory agents. Continuation of PHTX 515.

### PHTX 535 Introduction to Toxicology

Semester course; 4 lecture hours. 4 credits. The basic principles of toxicology and toxicological evaluations; correlations of toxicological responses with biochemical, functional and morphological changes; environmental (including occupational and public health), forensic and regulatory concerns; and risk assessment and management are presented for graduate students in the biomedical sciences.

### PHTX 536 Principles of Pharmacology and Toxicology

Semester course; 5 lecture hours. 5 credits.  
Prerequisites: PHIS 501 and BIOC 503 or permission of instructor. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacologically active agents and basic principles of pharmacology are discussed. Topics include drug absorption, distribution, and metabolism; chemotherapy; endocrine pharmacology and principles of toxicology/immunotoxicology.

### PHTX 537 Principles of Pharmacology and Toxicology

Semester course; 5 lecture hours. 5 credits.  
Prerequisites: PHTX 536 or with permission of instructor. Topics include receptor theory, autonomic, cardiovascular, and central nervous system pharmacology and toxicology. Continuation of PHTX 536.

### PHTX 548 Drug Dependence

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Graduate or post-baccalaureate standing.

A broad survey course in problems of drug and alcohol use and abuse. It will focus on the pharmacology of abused drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus.

### PHTX 597 Introduction to Pharmacological Research

Continuous course; 1-12 credits. Prerequisite: Permission of instructor. Rotation research in pharmacology and toxicology laboratories for beginning graduate students.

### PHTX 609 General Pharmacology and Pain Control

Continuous course; 2 lecture hours per week for 2 semesters. One grade for 4 credits at end of second semester. A two-semester course that covers the study of the effects of chemical agents on the structure and function of living tissues, which may be normal or pathological. Provides a basic understanding of pharmacological principles and the basic concepts of currently accepted theories of pain mechanisms and provides a scientific basis for the use of therapeutic agents in order that the future dentist will be able to safely administer drugs to control pain by parenteral, oral or inhalation routes.

### PHTX 611 General Pharmacology and Pain Control

Semester course; 2 lecture hours. 2 credits. A continuation of PHTX 609.

### PHTX 614 Foundation in Psychoneuroimmunology

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: At least one graduate level course in either immunocompetence, pharmacology, physiology, immunology, biochemistry, psychology or permission of instructor. This course will provide an in-depth overview of how brain and immune systems interact to maintain physiological and biochemical steady-states essential to wellness. Theory and research drawn from neuroscience, immunology and psychology will be examined as a foundation for understanding mind-body relationships. Beginning at the cellular level, fundamental information underlying mutually interact neuroendocrine-immune system functions will be synthesized to inform an understanding of wellness as well as a variety of pathophysiological states related to the stress process.

### PHTX 620/PHIS 620 Ion Channels in Membranes

Semester course; 3 lecture hours. 3 credits. Previous course work including basic concepts in electrophysiology, such as those covered in PHIS 501 Mammalian Physiology or PHTX/PHIS/ANAT 509 Introduction to Neurosciences, is highly recommended. Detailed presentation of the fundamental biophysical properties of ionic channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function.

### PHTX 625 Cell Signaling and Growth Control

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: PHTX 536 or consent of instructor. Covers biochemical and molecular biology approaches to pharmacological problems. Emphasizes signal transduction,

oncogenes, protein kinases, stress responses and the control of cellular proliferation.

### PHTX 632 Neurochemical Pharmacology

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: PHTX 536 or consent of instructor. Investigates the mechanisms of drugs acting on the central nervous system in relation to their effects on endogenous neurochemical systems. Examines the milieu in which drugs act upon the central nervous system, experimental techniques frequently used in neuropharmacology, specific neurotransmitter systems, as well as the mechanisms of action of specific drugs.

### PHTX 633 Behavioral Pharmacology

Semester course; 3 lecture hours. 3 credits. This is a survey course covering research on the effects of drugs on behavior. The major emphasis will be on schedule-controlled learned behavior. Additional topics will include drug self-administration, drug discrimination, and conditioned drug effects and behavioral toxicology. The course focuses primarily on laboratory research in animals although human research will also be covered. The relevance of this research literature to drug treatment of behavioral disorders and substance abuse will be discussed.

### PHTX 637 Cellular Pharmacology

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: PHTX 536 or permission of instructor. The principles governing the interactions of drugs and hormones with their cellular receptors are presented followed by a discussion of the biochemical mechanisms by which the interactions are transduced into specific cellular responses. Lectures are supplemented with demonstrations and student presentations of current literature in the area.

### PHTX 638 Cellular Mechanisms of Toxicology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. A holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

### PHTX 639 Drug Development

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: PHTX 536 and 537 or their equivalents. The principles of drug screening, advanced testing, and procedures necessary prior to the clinical evaluation of new products are described. An emphasis is placed on physiological type procedures used in pharmacology.

### PHTX 644 Forensic Toxicology

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Lecture and demonstrations in which common poisons and groups of poisons are discussed as to detection, diagnosis, and treatment of poisoning. Demonstrations include basic principles of analytical toxicology, forensic science, and courtroom testimony.

### PHTX 690 Pharmacology Research Seminar

Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.



### PHTX 691 Special Topics in Pharmacology

Semester course; 1-4 credits. Prerequisite: Permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

### PHTX 697 Directed Research in Pharmacology

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective projects for other students.

## Department of Physiology

Abd-Elfattah, Anwar-Saad A., Professor (Surgery)\*

Ph.D. Mississippi State University  
Protection of the failing heart.

Arena, Ross, Assistant Professor (Physical Therapy)\*

Ph.D. Virginia Commonwealth University  
Exercise and heart failure.

Barbee, Robert W., Assistant Professor (Emergency Medicine)\*

Ph.D. Louisiana State University  
Myocardial function and hemorrhagic shock.

Baumgarten, Clive Marc, Professor

Ph.D. Northwestern University  
Cardiac electrophysiology.

Biber, Thomas U. L., Professor

Ph.D. University of Berne  
Epithelial transport.

Biber, Margaret C., Professor and Department Chair

D.Phil. University of Oxford

Neurotransmitters.

Bowlin, Gary Lee, Associate Professor (Biomedical Engineering)\*

Ph.D. University of Akron  
Endothelial cell seeding for grafts and prostheses.

Broaddus, William Clendenin, Associate Professor (Neurosurgery)\*

M.D., Ph.D. Case Western Reserve University  
Radiosensitization of malignant gliomas.

Bullock, Malcolm Robert Ross, Reynolds Professor (Neurosurgery)\*

M.D. Birmingham, UK  
Ph.D. University of Natal  
Traumatic brain injury.

Churn, Severn Borden, Associate Professor (Neurology)\*

Ph.D. Medical College of Virginia  
Molecular mechanisms of receptor function in status epilepticus.

Clemons, S. Henry, Associate Professor (Cardiology)\*

M.D., Ph.D. University of Virginia  
Cell volume regulation.

Cohen, Neri M., Associate Professor (Surgery)\*

Ph.D., M.D. University of Maryland  
Myocardial electrophysiology and myocardial protection from ischemia-reperfusion injury.

Costanzo, Linda S., Professor

Ph.D. State University of New York Upstate Medical University  
Renal physiology.

Costanzo, Richard M., Professor

Ph.D. State University of New York Upstate Medical University  
Sensory physiology-chemical senses

Dent, Paul, Associate Professor (Radiation Oncology)\*

Ph.D. University of Dundee, Scotland  
Regulation of normal and carcinoma cell proliferation.

DeSimone, John A., Professor

Ph.D. Harvard University  
Sensory physiologic, chemical senses.

Fabiato, Alexandre, Professor

M.D., Ph.D. University of Paris  
Cardiac physiology.

Feher, Joseph J., Professor

Ph.D. Cornell University  
Muscle physiology.

Feldman, George, Associate Professor (Medicine)\*

M.D. New York University  
Epithelial transport in the kidney and gut.

Fillmore, Helen, Assistant Professor (Surgery, Division of Neurosurgery)\*

Ph.D. University of Tennessee  
Gene expression and gene therapy.

Fine, Michael L., Professor (Biology)\*

Ph.D. University of Rhode Island  
Behavior of marine fishes.

Ford, George D., Professor

Ph.D. West Virginia University  
Vascular smooth muscle physiology.

Goldberg, Stephen J., Professor (Anatomy and Neurobiology)\*

Ph.D. Clark University  
Neurobiology, cranial nerve motor unit physiology.

Graham, Martin F., Professor (Pediatrics)\*

M.B. University of Cape Town  
Gastroenterology.

Grider, John R., Professor

Ph.D. Hahnemann University  
Gastrointestinal physiology.

Heck, Gerard L., Assistant Professor

Ph.D. Duke University  
Sensory physiology, chemical senses.

Hess, Michael L., Professor (Internal Medicine)\*

M.D. University of Pittsburgh School of Medicine  
Cardiac muscle physiology.

Ivatury, Rao R., Professor (Surgery and Emergency Medicine)\*

M.D. Andhra Medical College, India  
Critical care of the trauma patient.

Jiang, Min, Assistant Professor

Ph.D. Peking Union Medical College, Beijing, China  
Cardiac ion channel regulation.

Kalimi, Mohammed Y., Professor

Ph.D. Bombay University  
Endocrinology.

Karnam, Srinivasa, Associate Professor

Ph.D. Sri Venkateswars University  
Cell biology and signal transduction.

Kauma, Scott William, Professor (Obstetrics and Gynecology)\* [Microbiology and Immunology]\*

M.D. University of Wisconsin Medical School  
Regulation of placental growth and trophoblast proliferation.

Kuemmerle, John Francis, Associate Professor (Internal Medicine)\*

M.D. Eastern Virginia Medical School  
Gastroenterology.

Kukreja, Rakesh, Professor (Internal Medicine/Cardiology)\*

Ph.D. Kurukshetra University, India  
Molecular cardiology.

Lyall, Vijay, Assistant Professor

Ph.D. Postgraduate Institute of Medical Education Research, India  
Membrane transport.

Marmarou, Anthony, Professor (Neurosurgery)\*

Ph.D. Drexel University  
Neurosciences.

Meredith, M. Alex, Professor (Anatomy and Neurobiology)\*

Ph.D. Virginia Commonwealth University  
Sensory processing and sensorimotor transformation.

Miller, Gerald, Professor (Chair, Biomedical Engineering)\*

Ph.D. Pennsylvania State University  
Rehabilitation engineering, fluid mechanics, artificial internal organs, epilepsy genesis.

Pittman, Roland N., Professor

Ph.D. State University of New York at Stony Brook  
Circulatory physiology.

Price, Steven, Professor

Ph.D. Princeton University  
Sensory physiology, chemical senses.

Ramoa, Ary S., Professor (Anatomy and Neurobiology)\*

M.D./Ph.D. Rio de Janeiro, University of California at Berkeley  
Neurobiology, neuronal differentiation during eye development.

Satin, Leslie, Professor (Pharmacology and Toxicology)\*

Ph.D. University of California at Los Angeles  
Physiology and pharmacology of ion channels.

Schoolwerth, Anton C., Professor (Internal Medicine, Chair, Division of Nephrology)\*

M.D. Harvard Medical School  
Nephrology.

Schubert, Mitchell Lee, Professor (Internal Medicine)\*

M.D. Baylor College of Medicine  
Gastroenterology.

Shapiro, Steven M., Associate Professor (Neurology)\*

M.D., Ph.D. University of Pittsburgh School of Medicine  
Neurophysiology, evoked potentials, auditory nervous system, development.

Simpson, David Glenn, Associate Professor (Anatomy and Neurobiology)\*

Ph.D. Northwestern University  
Mechanical regulation of cardiac gene expression and protein metabolism.

Stewart, Jennifer K., Associate Professor (Biology)\*

Ph.D. Emory University  
Endocrine physiology, hormone secretion.

Tseng, Gea-Ny, Associate Professor

Ph.D. Columbia University  
Cardiac ion channel regulation.

Walsh, Scott W., Professor (Obstetrics and Gynecology)\*

Ph.D. University of Wisconsin  
Endocrinology, reproductive physiology.

Ward, Kevin R., Assistant Professor and Director of Research (Emergency Medicine)\*

M.D. Tulane University School of Medicine  
Multidisciplinary approach to treating shock.

Ware, Joy L., Professor (Pathology)\*  
Ph.D. University of North Carolina  
Cancer cell biology.

Witorsch, Raphael J., Professor  
Ph.D. Yale University  
Endocrinology.

\* Department in parentheses indicates primary appointment.

\* Department in brackets indicates affiliate appointment.

## Graduate courses in physiology (PHIS)

### PHIS 501 Mammalian Physiology

Semester course; 5 lecture hours. 5 credits.  
Prerequisites: Biology, chemistry, and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students.

### PHIS 502 Physiology and Pathophysiology (Dentistry)

Semester course; 5 lecture hours. 5 credits.  
Prerequisites: Same as for PHIS 501. A comprehensive study of the function of mammalian organ systems, designed primarily for dental students.

### PHIS 504c Mammalian Physiology

Semester course; 3 lecture hours. 3 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for high school science teachers.

### PHIS 506 Mammalian Physiology (Pharmacy)

Semester course; 5 lecture hours. 5 credits. A comprehensive study of the function of mammalian organ system, designed primarily for pharmacy students.

### PHIS 509/ANAT 509/PHTX 509 Introduction to Neuroscience

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

### PHIS 512 Cardiovascular and Exercise Physiology

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: PHIS 501 or permission of instructor. A comprehensive study of cell and system cardiovascular and exercise physiology with pathophysiological implications, primarily designed for professional students. Physiological basis and introduction to the practical interpretation of the electrocardiogram will be taught with a computer-assisted method.

### PHIS 604 Cell Physiology

Semester course; 4 lecture hours. 4 credits. Provides first year graduate students with a physiological understanding of excitable tissues at the cellular level. Topics covered include the resting membrane potential

and action potential, communication between excitable cells, sensory transduction mechanisms and contractile tissues.

### PHIS 606 Physical Principles in Physiology

Semester course; 4 lecture hours. 4 credits.  
Prerequisite: PHIS 605 or permission of instructor. A survey of those principles of physics and physical chemistry underlying physiological processes. Topics include energetics of equilibrium and nonequilibrium systems, electrode processes, reaction-diffusion systems, kinetics, photochemistry, physical techniques in physiological research.

### PHIS 612 Cardiovascular Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An in-depth study of the original literature in selected areas of cardiovascular physiology.

### PHIS 615 Signal Detection in Sensory Systems

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: PHIS 501 or permission of instructor. An in-depth study of cells and cell systems that serve as either internal or external environmental sensors. Topics will emphasize the physiology, anatomy and the biochemistry of mature sensing systems, the systems in normal development and their plasticity toward stresses during development or in maturity.

### PHIS 617 Cellular Signaling

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: PHIS 501 and BIOC 503 or permission of instructor. An in-depth study of the original literature in selected areas that involve cellular signaling.

### PHIS 618 Renal and Epithelial Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHIS 604 or permission of instructor. An in-depth study of selected areas of renal and epithelial physiology. Topics include mechanisms of salt and water transport in the nephron, urinary concentrating mechanisms, hormonal regulation of ion transport, role of the kidney in acid-base homeostasis, diuretics, ion transport in amphibian epithelia, water and solute transport in gastrointestinal epithelia and lingual epithelia.

### PHIS 620/PHTX 620 Ion Channels in Membranes

Semester course; 3 lecture hours. 3 credits. Previous course work including basic concepts in electrophysiology, such as those covered in PHIS 501 Mammalian Physiology or PHTX/PHIS/ANAT 509 Introduction to Neurosciences, is highly recommended. Detailed presentation of the fundamental biophysical properties of ionic channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function.

### PHIS 690 Physiology Research Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminar.

### PHIS 691 (Section 1) Special Topics in Physiology

1-4 credits. Prerequisites: A 500-level physiology course or equivalent and permission of instructor. Lectures, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

### PHIS 691 (Section 3) Special Topics: Student Seminar

Semester course; 1 credit. Designed to develop skills in preparing and delivering lectures and other oral presentations. Students present talks on topics in which they are particularly interested, and provide mutual constructive criticism.

### PHIS 691 (Section 5) Special Topics: Nutrition Research

Semester course; 3 credits. Weekly discussion of selected topics in nutrition. Topics change yearly. Topics range from biochemical aspects of nutrition to International Nutrition, with selections from various levels of nutritional interest presented each year. Past topics have included nutrition and exercise, diet and cancer, total parenteral nutrition, alcohol nutrition, food safety, drug-nutrient interactions, nutrition and immunological response, cholesterol and nutrition, salty taste mechanisms, vitamin A, vitamin D, and intestinal calcium absorption.

### PHIS 697 Directed Research in Physiology

Semester course; 1-15 credits. Research Leading to the M.S. or Ph.D. degree and elective research projects for other students.

## Department of Preventive Medicine and Community Health

Adera, Tilahun, Professor and Department Chair  
[Biostatistics, Health Administration]\*  
B.Pharm. Addis Ababa University, Ethiopia  
Ph.D. Oregon State University  
M.P.H. University of Washington  
M.A. Oregon State University  
Occupational epidemiology, low back pain, hearing loss, breast cancer and health effects of environmental pollutants.

Adler, Robert A., Professor of Internal Medicine (Chief, McGuire Veterans Affairs Medical Center)\*  
B.A. Johns Hopkins University  
M.D. Johns Hopkins University, School of Medicine  
Endocrinology, metabolism and internal medicine.

Amponsah, Akwasi A., Assistant Professor (Southeast Mississippi Rural Health Initiative)\*  
M.D. Meharry Medical College  
M.P.H. John Hopkins University  
M.S. North Carolina Central University  
Substance abuse and domestic violence.

Ayres, Stephen M., Professor Emeritus (Sponsored International Programs)\*  
M.D. Cornell University College of Medicine  
Internal medicine and cardiology.

Baffi, Charles R., Professor (Division of HPER at VPI and SU)\*  
Ph.D. University of Maryland  
M.P.H. Hunter College of the City University of New York  
Drug free schools, prevention of substance abuse, AIDS education, smoking and alcohol risks and diabetes.

Battista Jr., Joseph W., Associate Professor  
A.B. Princeton University  
M.D. Cornell University Medical College  
Obstetrics and Gynecology.

- Borzelleca Jr., Joseph F., Assistant Professor (Obstetrics and Gynecology)\*  
B.A. University of Virginia  
M.D. Medical College of Virginia  
Obstetrics and Gynecology, Emergency Medicine.
- Bradford, Judith, Assistant Professor (Survey Research Laboratory)\*  
Ph.D. Virginia Commonwealth University  
C.A.C. State of Pennsylvania  
M.Ed. James Madison University  
Develop, support and administer interdisciplinary applied research and community health projects, collect, analyze, and present data to state and federal agencies and policy makers.
- Buttery, C.M.G., Professor  
M.B.B.S. University of London, England  
M.P.H. Johns Hopkins University  
Preventive medicine, public health.
- Buzzard, I. Marilyn, Associate Professor Emerita  
Ph.D., M.A. and M.S. Syracuse University  
Nutritional epidemiology, dietary assessment and nutrition intervention.
- Clement, Delores A., Associate Dean and Professor, (Allied Health Professions)\*  
Ph.D. University of California at Berkeley  
M.S. Rush University  
M.A. Ohio University  
Health policy and administration, health systems management, health care economics and finance, international affairs, political science, economics and business administration.
- Compton, David A., Associate Professor (Philip Morris USA)\*  
M.D. Virginia Commonwealth University  
M.P.H. Johns Hopkins University  
M.S. Virginia Commonwealth University  
Biology, biochemistry, medicine, occupational medicine.
- Danish, Steven J., Professor, Department of Psychology and Director, Life Skills Center  
A.B. Bucknell University  
M.S. Springfield College  
Ph.D. Michigan State University  
Health and sports psychology, promotion and enhancement of competence, prevention of substance abuse.
- Edmond, Michael B., Associate Professor (Internal Medicine)\*  
B.S. Fairmont State College  
M.D. West Virginia University School of Medicine  
M.P.H. University of Pittsburgh  
Epidemiology, infectious diseases, quality health care.
- Ellis, Herman M., Associate Professor (Director, Richmond City Health Department)\*  
B.S. Manhattan College  
M.P.H. University of Michigan  
M.D. Boston University  
Environmental medicine, infectious disease epidemiology, unintentional injury, health policy.
- Fobbs, Erima S., Instructor (Director, Center for Injury and Violence, Virginia Department of Health)\*  
B.S. McGill University  
M.P.H. Yale University  
Injury and violence prevention.
- Fries, Elizabeth A., Associate Professor (Psychology)\*  
Ph.D. University of Washington  
Health psychology, community intervention, smoking, diet.
- Franck, Thomas G., Assistant Professor (Central Region Physician Consultant Emergency Preparedness and Response Programs, Virginia Department of Health)\*  
M.D. University of Virginia, School of Medicine  
M.P.H. Virginia Commonwealth University  
Public health surveillance, bioterrorism.
- Geddes, Norma, Assistant Professor (Departments of Health Administration and Preventive Medicine and Community Health)\*  
Ph.D. Virginia Commonwealth University  
M.S.N. and B.S.N. University of Virginia  
M.Ed. University of Toronto  
Public health education, long term care, health care issues, health care organization, finance and performance.
- Ginder, Gordon D., Professor (Internal Medicine Director, Massey Cancer Center)\*  
M.D. Johns Hopkins University  
Internal medicine, hematology, oncology.
- Hanna, Constance, Associate Professor (Honeywell)\*  
M.D. Hahnemann Medical College  
M.P.H. Virginia Commonwealth University  
Occupational medicine, internal medicine.
- Harris, Shelley, Assistant Professor (Center for Environmental Studies)\*  
Ph.D. University of Toronto  
M.S. University of Guelph  
Epidemiology and environmental toxicology.
- Hunt, Ronald J., Professor (Dean, School of Dentistry)\*  
D.D.S. University of Iowa  
M.S. University of Iowa  
General dentistry, dental ecology, preventive and community dentistry, epidemiology.
- Itskovich, Gregory A., Assistant Professor (Sponsored International Programs)\*  
Ph.D. State Military Medical Academy  
M.S. Electra-Technical College  
B.S. Electra-Technical College  
International health.
- Jackson, Melanie N., Associate Professor (Political Science and Public Administration, Director, African American Studies Program)\*  
B.A. Georgia State University  
Ph.D. Atlanta University  
Public policy; race, class and gender in U.S. politics; comparative politics; political theory and ideology; science, politics and society.
- Jannuzzi, Daniel M., Associate Professor (Cross-Over Health Center)\*  
M.D. Eastern Virginia Medical School  
Family practice, biology and philosophy.
- Jones, Jacob E., Assistant Professor (Riverside Family Practice Center)\*  
B.S. University of Maryland  
M.D. University of Maryland  
M.P.H. Virginia Commonwealth University  
Occupational medicine, family practice.
- Kaplowitz, Lisa G., Associate Professor (Virginia Department of Health)\*  
M.D. University of Chicago  
Internal medicine and infectious disease.
- Kreutzer, Kathleen O., Assistant Professor (Curriculum Office, School of Medicine)\*  
M.Ed. Virginia Commonwealth University  
Medical school curriculum development, curriculum planning and design, planning program for accreditation.
- Kuzel, Anton, J., Professor (Chair, Family Practice)\*  
B.S. University of Illinois  
M.D. University of Illinois  
Family practice, health promotion, disease prevention.
- Lanier, Jack O., Professor (Health Administration)\*  
Dr.P.H. University of Texas Health Science Center  
M.H.A. Baylor University  
Community health, health planning, preventive medicine and public health policy.
- Luke, Roice D., Professor, Department of Health Administration  
B.S. University of California at Berkeley  
M.B.A. University of California at Berkeley  
Ph.D. University of Michigan  
Medical care organization, health economics, and quality assurance.
- Marr, John S., Professor (Director, Epidemiology, Virginia Department of Health)\*  
M.D. New York Medical College  
M.P.H. Harvard School of Public Health  
B.A. Yale University  
Infectious disease, public health surveillance.
- Marshland, David W., Professor (Family Practice)\*  
A.B. Clark University  
M.D. Albany Medical College of Union University  
Family practice.
- Masho, Saba W., Assistant Professor  
M.D. Gondar College of Medical Sciences  
M.P.H. University of Addis Ababa, Ethiopia  
Dr.P.H. University of California at Berkeley  
Behavioral epidemiology, maternal and child health.
- May Jr., James C., Assistant Professor (Director, Substance Abuse Services, Richmond Behavioral Health Authority)\*  
Ph.D. Virginia Commonwealth University  
M.S. Virginia Commonwealth University  
M.S. University of Cincinnati  
Early intervention and mental health services.
- Mazmanian, Paul E., Professor (Associate Dean, Continuing Medical Education)\*  
Ph.D. University of Michigan  
M.A. Michigan State University  
Preventive medicine, research in medical education.
- McGehee, Read F., Associate Professor (Sleep Disorders Center of Virginia)\*  
M.D. Medical College of Virginia  
Epidemiological investigations.
- McGurl, John D., Assistant Professor (Veterans Affairs Medical Center)\*  
M.D. Virginia Commonwealth University  
B.S. George Washington University  
International health.
- Meyer, Aleta L., Assistant Professor (Psychology)\*  
B.S. University of Tennessee  
M.S. Pennsylvania State University  
Ph.D. Pennsylvania State University  
Violence prevention, cancer prevention, community-based health promotion.
- Mick, Stephen S., Professor (Chair, Health Administration)\*  
B.A. Stanford University  
M.Phil. Yale University  
Ph.D. Yale University  
Health administration.

Miller, Grayson B., Associate Professor (Deputy Commissioner, Bioterrorism Preparedness and Response Program, Virginia Department of Health)\*  
M.D. Medical College of Virginia  
Internal medicine, epidemiology, immunology, infectious diseases.

Murrelle, Edward L., Assistant Professor (Epidemiologist, GlaxoSmithKline)  
Ph.D. University of Pittsburgh  
M.S.P.H. University of North Carolina  
B.A. Wake Forest University  
Psychiatric and pharmacoepidemiology.

Nelson, William R., Associate Professor (Director, Chesterfield Health District)\*  
M.D. Medical College of Virginia  
M.P.H. University of North Carolina  
Preventive medicine, public health, OB/GYN.

Peoples, Edward H., Associate Professor Emeritus  
Ph.D. University of Kentucky  
M.A. University of Pennsylvania  
Violence prevention, teen pregnancy, cancer rehabilitation, human rights and relations, African-American studies, and instilling family values, education and a variety of social services to penitentiary inmates.

Peoples, Napoleon L., Assistant Professor (Interim Director, Office of Multicultural Student Affairs)\*  
B.A. Wilberforce University  
M.Ed. Kent State University  
Ed.S. Kent State University  
Ph.D. Kent State University  
Counseling psychology.

Pinn Jr., Melvin T., Assistant Professor (Medical Director, The Wellness Plan of North Carolina)\*  
M.D. University of Virginia, School of Medicine  
M.P.H. University of North Carolina  
B.S. Johnson C. Smith University  
Health care utilization.

Reynolds-Cane, Dianne L., Assistant Professor (President and C.E.O., International Healthcare Systems, L.L.C.)\*  
M.D. Howard University College of Medicine  
Health care services delivery.

Ross, James W., Associate Professor (Richmond Health Group)\*  
M.D. University of Florida  
M.P.H. Medical College of Wisconsin  
Occupational medicine, toxicology, industrial hygiene, ergonomics, OSHA regulations, development of corporate wellness programs.

Rothemich, Stephen F., Associate Professor (Family Practice)\*  
M.D. Virginia Commonwealth University  
Family practice.

Sanders, Karen M., Professor (Chief of Staff for Education, Veterans Affairs Medical Center)\*  
M.D. New York Medical College  
Internal medicine, microbiology, immunology and connective tissue disease.

Seifen, Gerges A., Associate Professor (Virginia Department of Health, Office of Family Health Services)\*  
M.B., B.Ch.(M.D.) Ain Shams University, Egypt  
M.P.H. Virginia Commonwealth University

Family practice, health program planning, design and implementation and evaluation.

Speizer, Ilene S., Assistant Professor (Psychology)\*  
B.A. Washington University  
M.H.S. Johns Hopkins University  
Ph.D. Johns Hopkins University  
Biostatistics, population dynamics.

Stroube, Robert B., Associate Professor (Acting State Health Commissioner, Virginia Department of Health)\*  
M.D. Medical College of Virginia  
M.P.H. Johns Hopkins University  
Preventive medicine, epidemiology, radiological health, occupational health, environmental health, and toxic substance.

Turf, Elizabeth P., Associate Professor (Survey Research Lab)\*  
Ph.D. Wayne State University  
M.S. Wayne State University  
Epidemiology, immunology, microbiology and medical technology.

Tweel, Theodore, Associate Professor (Health Director, Hanover Health Department)\*  
M.D. Medical College of Virginia  
M.P.H. Medical College of Virginia  
Preventive medicine, family practice.

Vance, R. Leonard, Associate Professor (Center for Environmental Studies)\*  
Ph.D. University of Virginia  
J.D. University of Richmond  
Chemistry, inorganic chemistry, occupational and environmental issues, industrial hygiene, law, environmental law, continuing educational/environmental training, and consultant on state and federal regulatory issues.

Wan, Thomas T. H., Professor (Health Administration)\*  
Ph.D. University of Georgia  
M.H.S. Johns Hopkins University  
M.A. University of Georgia  
Health systems, evaluation/analysis, medical sociology, demography/epidemiology.

Wenzel, Richard P., Professor (Chair, Internal Medicine)\*  
M.D. Jefferson Medical College  
M.Sc. London University  
Allergy and infectious diseases, epidemiology, internal medicine, preventive medicine, tropical medicine.

Wesdock, James C., Associate Professor (The McGuire Clinic, Occupational and Preventative Medicine Department)\*  
M.D. Hahnemann University  
M.P.H. University of Oklahoma  
Family medicine, occupational medicine, preventive medicine.

Wilson, Diane B., Associate Professor  
B.S. University of Delaware  
M.S. Louisiana State University  
Ed.D. University of South Carolina  
Health promotion, cancer prevention research/program administration, public health, community outreach, women's and adolescent lifestyle habits, specialized expertise in nutrition.

Woolf, Steven H., Professor (Family Practice)\*  
B.A. University of Missouri  
M.D. Emory University  
M.P.H. Johns Hopkins University  
Family practice, preventive medicine.

\* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

## Graduate courses in preventive medicine and community health (PMCH)

### PMCH 511-512 Basic Industrial Hygiene I and II

Continuous course; 3 lecture hours. 3 credits. Basic concepts including; epidemiology, industrial toxicology, biological monitoring dermatosis, sampling strategy, solvents, particulates, respiratory protection, ventilation, sound, heat stress, radiation, ergonomics, special topics, and the regulatory aspects.

### PMCH 521 Regulation of Toxic Substances

Semester course; 3 lecture hours. 3 credits. This course introduces the student to the administrative law and policy issues. This course examines the Clean Water Act, Clean Air Act, Resources Conservation & Recovery (RCRA), Federal Facility Compliance Act, Comprehensive Environmental Response, Compensation & Liability Act (CERCLA-Superfund), Toxic Torts; Real Estate Issues; Recovery of Money Damages; Criminal Law, Occupational & Mine Safety & Health Acts (OSHA/MSHA), Workman's Compensation; Occupational Disease; Victim Compensation, Safe Drinking Water Act; Pollution Prevention Act, Food Drug & Cosmetic Act, RCRA & Superfund Regulations & Case Law; State Hazwaste/Superfund Programs, Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA); Lead Based Paint Poisoning Prevention Act, Radiation Law & Regulation; Transportation, Marine Sanctuaries Act; International Environmental Law.

### PMCH 541 Principles of Waste Management

Semester course; 3 lecture hours. 3 credits. Design and operation of waste treatment, storage, disposal and control processes will be covered. Design tanks, landfills, and incinerators will be discussed in detail. Data acquisition and interpretation methods needed for process control and monitoring will be examined.

### PMCH 543/BIOS 543/STAT 543 Statistical Methods I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

**PMCH 571 Principles of Epidemiology**

Semester course; 2 lecture hours and 1 seminar. 3 credits. Offers the theoretical foundation for understanding the health problems and needs of American society and uses scientific and social knowledge to examine factors that cause and alter the course of health problems in selected populations.

**PMCH 583 Industrial Ventilation**

Semester course; 3 lecture hours. 3 credits. Principles of design and evaluation of local exhaust systems. Principles of airflow, characteristics of pressure losses, and selection of air cleaners and air moving.

**PMCH 600 Introduction to Public Health**

Semester course; 3 lecture hours. 3 credits. Describes the public health system in the United States. Explores the disease prevention and philosophy and foundations of public health management, economics, law, ethics and education. Examines the use of epidemiology and statistics to determine personal, environmental, and occupational health problems.

**PMCH 602/HADM 602 Health System**

**Organization, Financing and Performance**  
Semester course; 3 lecture hours. 3 credits. Examines the structure, functioning and financing of the U.S. health services system. Emphasizes foundational concepts for understanding and analyzing patterns of health and illness; health care cost, quality, access and utilization; workforce; competition in health care markets; and supplier, provider and payer effectiveness and efficiency.

**PMCH 603 Public Health Policy and Politics**

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the public health policy development process, the influence of politics and special interest groups on this process, and current governmental policies for the provision of major public health services. The legislative process is a major focus of the course.

**PMCH 604 Principles of Occupational and Environmental Health II**

Semester course; 3 lecture hours. 3 credits. Basic principles of occupational and environmental health are presented, with emphasis on biological, chemical, and physical factors that influence human health. Current workplace and public health safety and regulatory issues are emphasized.

**PMCH 605 Epidemiology of Health Behaviors**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: BIOS 543 and PMCH 571. Provides an overview of the epidemiology of specific health-related behaviors, the relationships between these behaviors and health outcomes, and available evidence for the effectiveness and appropriateness of various approaches to modification of these behaviors. This material will be covered in the contexts of theories of health-related behavior and of methodological issues concerning the assessment of these behaviors and their relationships to outcomes of interest. The applicability of this material to underserved populations will be emphasized. The course format, as far as possible, will be that of an interactive seminar.

**PMCH 606 Epidemiologic Methods II**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: BIOS 543 and PMCH 571. Examines the whys and hows of determining major population health risks. Focuses on the design of a research project to determine the risks to health of an identified popula-

tion using sampling and survey techniques, data collection and data analysis.

**PMCH 607 Nutritional Epidemiology**

Semester course; 3 lecture hours. 3 credits. This course focuses on methods of measuring exposures to dietary factors for epidemiological investigations of diet-disease relationships and risk assessment. An introductory course in basic epidemiology is a prerequisite. Students learn to select the most appropriate method(s) of collecting and analyzing food intake and to evaluate the adequacy of dietary assessment methods used in published epidemiological studies.

**PMCH 610 Environmental and Occupational Epidemiology**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: BIOS 543 and PMCH 571. This course is designed to provide students with an overview of the principles, methods and content of environmental and occupational epidemiology with a focus on designing, conducting, and interpreting studies on the effects of chemical and physical agents. Students will critique published occupational and environmental epidemiology studies, learn how to evaluate the potential for cause-effect relationships, and become familiar with the role of epidemiology in human health risk assessment. Each session will include a seminar component where exercises are completed and/or published papers will be critiqued and discussed.

**PMCH 615 Public Health Issues and Interventions in Communities of Color**

Semester course; 3 lecture hours. 3 credits. This course is an overview of many critical psychological, social, cultural, demographic, biological, and other factors that influence lifestyle and disease susceptibility among minority status ethnic groups and other medically underserved populations in the United States. A lecture/discussion seminar format will be used, along with readings, student presentations and guest lecturers working in the field, to: (1) improve the students' understanding of the underpinnings of health status differences across communities; and (2) provide students with tools that can be used in developing effective interventions to address the maldistribution of health risk behavior and disease burden.

**PMCH 616 Public Health Education**

Semester course; 3 lecture hours. 3 credits. Provides the student with an examination of theory and practice of public health education. This examination represents an overview of selected topics that are congruent to the Responsibilities and Competencies for Entry-Level Health Educators. Specifically, course content will be centered around assessing individual and community needs for health education programs, coordinating provision of health education services, acting as a resource person in health education, and communicating health and health education needs, concerns, and resources.

**PMCH 617/HADM 626 International Health**

Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

**PMCH 618 Public Health Law**

Semester course; 3 lecture hours. 3 credits. Provides the student with the structure of the legal system and statutes and regulations governing state and local health departments. This course examines the federal

public health laws, medical malpractice, privacy and confidentiality issues, mental health laws, abortion and sterilization, patients rights, emergency medical care law, human experimentation, rights of the terminally ill, AIDS law, occupational and environmental health law, and health planning and reimbursement law.

**PMCH 619 Intentional Injury**

Semester course; 3 lecture hours. 3 credits. Examines the number, distribution, and impact of intentional injuries in the United States, as well as some of the crucial psychological, social, cultural, demographic, economic, biological, and other factors associated with their cause, control, and prevention. Through lectures and dialogue, expert panels, student presentations, reading, and other assignments, students are expected to become acquainted with theory and research findings from the behavioral sciences, behavioral epidemiology, public health, and other sources that are likely to contribute to: (1) a greater comprehension of the magnitude and complexities of violence and intentional injuries in American life and (2) advancements in our capacity to successfully confront this epidemic with public health and related measures.

**PMCH 691 Program Research Project**

Semester course; 9 clinical hours. 1-6 credits. Each student will complete a research project that demonstrates the application of the knowledge acquired in the MPH Program. The student will answer one or more relevant research questions. The final product is a scholarly written report of publishable quality. A proposal must be submitted for approval and credits are assigned commensurate with the complexity of the project. Arrangements are made directly with the faculty adviser.

**PMCH 693 Special Topics Research**

Semester course; 3 lecture hours. 1-6 variable credits. This course provides the opportunity for students to explore a special topic of interest under the direction of a faculty member. A proposal must be submitted for this approval and credits are assigned commensurate with the complexity of the project. Arrangements are made directly with the appropriate faculty member and department chair.

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**Other courses in the School of Medicine**

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**Graduate course in neuroscience (NEUS)**

**NEUS 891 Advanced Topics in Neuroscience**

Semester course; 1 lecture hour. 1 credit. Prerequisite: Permission of instructor. Advanced topics in neuroscience with correlations to research and clinical applications. Interdisciplinary presentation of the relationship of principles of neuroscience to current areas of investigation.



# School of Nursing

## Graduate Programs

The School of Nursing originated in 1893 as part of the University College of Medicine. Since then, the educational program has evolved from a basic diploma program to multiple programs at the baccalaureate, master's and doctoral degree levels. Additionally, the School of Nursing offers post-master's certificate programs. The School of Nursing takes pride in its long history of service to the profession of nursing and continues to be a leader in nursing education in Virginia.

### Master's Program in Nursing

The graduate program in nursing is based on the goals and the philosophy of the university and the School of Nursing. Differentiation between the undergraduate and the graduate programs is reflected in the philosophy and purpose of graduate education, the characteristics of the graduates and the program objectives. The graduate program is designed to respond to national nursing needs through creative, flexible approaches to graduate nursing education.

Graduate education is professionally oriented and has three major thrusts: (1) integration of three processes including transmission, utilization and development of knowledge in an advanced practice area, (2) development of increased skill in application of knowledge to advanced practice, and (3) development of an awareness of the interaction between social, cultural, political and economic forces which have an impact on nursing practice in complex health care delivery systems. Advanced study emphasizes analysis and synthesis of knowledge from nursing and related disciplines with systematic investigation of underlying concepts. Graduates of this program should integrate this new knowledge into nursing practice. Graduates should occupy pivotal roles to improve health care and influence health policy in political arenas. With these three thrusts, graduates of this program have a knowledge base for further research and doctoral study.

Graduate education is directed toward professional practitioners who are self-directed in setting educational goals and in

determining learning strategies best suited for their cognitive styles. With guidance and direction, adult learners should be able to integrate past experiences with current learning situations to expand their approaches to problem solving. Graduate education permits greater autonomy in more diverse environments for learning and practice including the political arena, all levels of the health care delivery system and community agencies whose missions are directed toward meeting the health needs of their clients. The graduate program in nursing:

- prepares nurses for advanced practice in an area of specialization utilizing their own conceptual framework, constructed through advanced study,
- prepares nurses for advanced practice in an increasingly technological society,
- develops leadership skills in an advanced practice area, and
- provides a foundation for further research and scholarly study.

The School of Nursing offers programs of study leading to the master of science degree. Concentrations combining major study in advanced practice nursing are:

	credits
Adult health (acute care)	50
Adult health (clinical nurse specialist)	53-58
Adult health (primary care)	50
Child health	42
Family health	53
Integrative Psychiatric mental health	55
Nursing Administration and Leadership	44
Women's health	47

### Accreditation

The master's degree program in nursing is accredited by the National League for Nursing Accrediting Commission, 61 Broadway, 33rd Floor, New York, NY 10006; (800) 669-1656, ext. 153.

### Admission requirements and procedures

The purpose of the following admission requirements and procedures is to encourage applications from competent students and

1220 E. Broad St. • P.O. Box 980567  
Richmond, VA 23298-0567  
(804) 828-5171 • Fax (804) 828-7743  
<http://www.nursing.vcu.edu>

#### Nancy F. Langston

Dean  
R.N., Ph.D.

#### Inez Tuck

Associate Dean for Doctoral Program and Research  
R.N., Ph.D.

#### Janet B. Younger

Associate Dean for Undergraduate and Master's Programs  
R.N., Ph.D.

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to ensure selection of those whose ability, education and motivation qualify them to pursue successful graduate study in nursing.

To be considered for admission, an applicant must have:

- A bachelor of science in nursing from an NLN accredited school or a baccalaureate degree in another field with a lower division nursing education (associate degree or diploma). Applicants who hold a baccalaureate degree in another field who are not

registered nurses are eligible for admission to the Accelerated Second Degree Program (entry-level master's program). Applicants for this track are admitted to the graduate program and pay graduate fees.

- Transcripts reflecting completion of undergraduate courses in statistics, research and health assessment (health assessment not required for accelerated second degree students). In addition, all nursing administration students are required to have undergraduate courses in accounting and economics or microeconomics. Economics and accounting may be taken after admission for students enrolled in part-time study.

Additional prerequisites for the accelerated second degree option are five to eight credit hours of anatomy and physiology, three credit hours of developmental psychology and six credit hours of English composition (or satisfactory completion of writing requirements of the student's undergraduate program).

- Acceptable scores on the Graduate Record Examination (GRE) general test. Scores cannot be older than five years.
- TOEFL scores of greater than 550 for international students.
- A current unrestricted registered nurse license in a state, Washington, D.C., or a U.S. possession or territory, or an equivalent credential in another country. For accelerated second degree students, license is required within 90 days after completion of bachelor's in nursing degree in order to remain enrolled in graduate courses.
- Graduates of foreign nursing schools who are licensed outside of the United States, are required to pass the Qualifying Exam of the Commission on Graduates of Foreign Nursing Schools (CGFNS) prior to application and include the exam report in the application materials.
- Professional liability insurance is highly recommended.
- References from the applicant's undergraduate program and from employers/supervisors.
- A personal interview may be requested.

Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate..>

Additional program information and advisement can be obtained through the Office of Enrollment and Student Services, 1220 E.

Broad St., P.O. Box 980567, Richmond, VA 23298-0567; phone (804) 828-5171 or toll free (800)828-9451; fax (804) 828-7743; e-mail: [vcu\\_nurse@hsc.vcu.edu](mailto:vcu_nurse@hsc.vcu.edu) or visit the School of Nursing Web site: <http://www.nursing.vcu.edu>.

Applications are reviewed by the School of Nursing. Applicants will be notified of action by the dean of the School of Graduate Studies. Applicants who are granted provisional admission are responsible for satisfying the provision or may be subject to dismissal. Applicants should accept an admission offer in writing and submit a tuition deposit as instructed in their admission letters. The tuition deposit is not refundable, but will be applied to tuition during the first semester of enrollment in courses.

## Graduation requirements

To be a candidate for the degree of master of science with a major in nursing, students must be recommended by the faculty and must:

- meet academic requirements of the School of Graduate Studies,
- complete all requirements for the prescribed curriculum within five calendar years of the first registration for work to be credited toward the degree,
- earn at least a "B" or pass grade in all nursing courses,
- earn at least a cumulative average of 3.0 in all work presented for graduation, and
- conform to School of Nursing policies in respect to pass/fail grading for course work or thesis study.

The degree will be granted only after all requirements have been fulfilled, all fees to the university have been paid, and bound copies of the thesis have been submitted. Degrees are not granted in absentia unless written request is made to the dean and permission is granted.

## Academic requirements

- A student may not proceed in the program with a GPA of less than 3.0 or with a grade of less than "B" in any nursing course. In exceptional circumstances, an appeal for progression may be made to the Graduate Curriculum and Evaluation Committee. Students earning less than a "C" are referred to policy 6.4.1 in the School of Nursing

Policy and Information Handbook (<http://www.nursing.vcu.edu/faculty/policy.htm>).

- An adviser for each student is appointed by the department chair. That adviser will assist the student in program and career planning, registration procedures and certification for graduation.
- The departments of Adult Health Nursing, Integrative Systems and Maternal Child Health Nursing will assist respective students with advanced practice certification.
- Following are the requirements for students electing the thesis option:

Committee formation:

- With the approval of the department chair, the student selects a thesis committee of not fewer than three university faculty. One member must be outside the major department and may be outside the School of Nursing.
- The student selects the committee chair from School of Nursing graduate faculty, but not necessarily from the student's major department.
- The student provides each member of the committee with a copy of the thesis in accordance with the School of Graduate Studies Thesis and Dissertation Manual.

Committee responsibilities:

- The committee monitors the design and conduct of the research and the preparation of the thesis.
- The committee serves as the examining committee for the thesis.
- Committee members read and approve the thesis and participate in the final oral examination of the student. The final examination is open to faculty and students. The time and place, together with the candidate's name, department and thesis title, shall be announced in the School of Nursing 10 days in advance of the examination.

Outcome:

- Each member of the examining committee will attend and cast a vote.
- A favorable vote of the examining committee with no more than one negative vote shall be required to pass the oral examination.



## Master of science degree program requirements in nursing

### Clinical practice concentrations

Core courses	credits
NURS 501 Advanced Professionalization I	1
NURS 502 Advanced Nursing Practice: Pharmacotherapeutics	3
NURS 503 Advanced Nursing Practice: Psychosocial	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 508 Advanced Nursing Practice: Systems	3
NURS 509 Advanced Nursing Practice: Community**	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
NURS 512 Advanced Nursing Science	3
NURS 601 Advanced Professionalism II	1

\* Adult Health Clinical Nurse Specialist students select 509.

+ Child health students substitute IDDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities

### Concentration courses

Adult Health Acute Care Nurse Practitioner	credits
NURS 633 Common Health Problems of Women	1
NURS 660 Advanced Adult Health	3
NURS 661 Advanced Adult Health II	4
NURS 663 Advanced Adult Health III	3

### Adult Health Primary Care Nurse Practitioner

NURS 633 Common Health Problems of Women	1
NURS 660 Advanced Adult Health	3
NURS 661 Advanced Adult Health II	4
NURS 663 Advanced Adult Health III	3

### Adult Health Clinical Nurse Specialist

NURS 660 Advanced Adult Health	3
NURS 661 Advanced Adult Health II and/or NURS 663 Advanced Advanced Adult Health III (depending on focus)	3-7
NURS 687 Management Systems and Health Care Outcomes	3
ADLT 603 Instructional Strategies for Adults	3

### Integrative Psychiatric Mental Health Nursing

NURS 654 Nurse as Integrative Healer	3
NURS 655 Nurse as Integrative Leader	2
NURS 656 Integrative Mental Health Nursing: Management and Treatment of Psychopathology for Advanced Practice Nurses	3
NURS 657 Integrative Mental Health Nursing: Contemporary Practice	3
NURS 658 Complementary Healing Modalities	3
NURS 659 Integrative Mental Health Nursing: Synthesis	4

### Nursing Administration and Leadership

NURS 505 Advanced Practice Nursing: Computer and Information Technology	1
NURS 655 Nurse as Integrative Leader	2
NURS 681 Nurses as Organizational Leaders	3

NURS 692 Integrative Administrative Systems Practicum I	3
NURS 680 Leading People	3
NURS 693 Integrative Administrative Systems Practicum II	3
NURS 690 Application of Financial Concepts	4
NURS 687 Management Systems and Health Care Outcomes	4
NURS 694 Integrative Administrative Systems Practicum III	4
Accounting elective	3

### Women's Health Nursing

NURS 632 Health Promotion in Women	2
NURS 633 Common Health Problems of Women	3
NURS 634 The Childbearing Woman	3
NURS 661 Advanced Adult Health II	3

### Child Health Nursing

NURS 633 Common Health Problems of Women	1
NURS 647 Health Promotion in Children	2
NURS 648 Clinical Management of Acute Problems of Children	3
NURS 649 Chronic Illness and Disability in Children	2
IDDS 600 Interdisciplinary Teamwork	3

### Family Health Nursing

NURS 633 Common Health Problems of Women	3
NURS 634 The Childbearing Woman	3
NURS 647 Health Promotion in Children	2
NURS 648 Clinical Management of Acute Problems of Children	3
NURS 661 Advanced Adult Health II	3
NURS 670 Primary Care of Families	3

### Concentration Practicum courses

(varies by concentration)	
NURS 622 Integrative Psychiatric Mental Health Nursing Practicum	1-3
NURS 623 Integrative Psychiatric Mental Health Nursing Practicum II	1-4
NURS 624 Integrative Psychiatric Mental Health Nursing Practicum III	1-4
NURS 672 Child Practicum I	1-3
NURS 673 Child Practicum II	1-3
NURS 674 Child Practicum III	1-4
NURS 675 Adult Immunocompetence Practicum I	1-3
NURS 676 Adult Primary Practicum	2-6
NURS 677 Advanced Adult Primary Practicum	2-5
NURS 678 Adult Acute Practicum	2-6
NURS 679 Advanced Adult Acute Practicum	2-5
NURS 682 Women's Practicum I	1-4
NURS 683 Women's Practicum II	1-4
NURS 684 Family Practicum	1-4
NURS 685 Women's Practicum III	1-5
NURS 689 Integrative Systems Practicum	10
NURS 692 Integrative Administrative Systems Practicum I	3
NURS 693 Integrative Administrative Systems Practicum II	3
NURS 694 Integrative Administrative Systems Practicum III	3

The Adult Health Concentrations include acute and primary care. Students also may select a role; current role options are the

nurse practitioner or the clinical nurse specialist. The nurse practitioner role focuses on the provision of advanced independent nursing care integrated with delegated medical diagnostic and management activities. The adult primary care nurse practitioner has a practice located in an ambulatory care setting and focuses on health promotion, risk reduction and evidence based primary care to individual patients. The adult acute care nurse practitioner generally works in an acute care setting, often within a multidisciplinary team focused on the provision of evidence based care to adults who are acutely ill. The sphere of influence of the Nurse Practitioner is that of the patient. The clinical nurse specialist focuses on advanced nursing care to a specific population of adults. The clinical nurse specialist is responsible for ensuring excellence in the delivery of nursing care to patients within that population. This includes consultation with individual patients as well as with nurses who provide care to the patient in an acute care setting, and overall systems management to facilitate care. The site of practice is determined by the location of the patient population of interest — it may be in a primary care setting, for example, people undergoing chemotherapy. The sphere of influence of the clinical nurse specialist is threefold: patient, nursing personnel and systems/organizations.

The Integrative Psychiatric Mental Health concentration prepares graduates for roles as a clinical nurse specialist and nurse practitioner in adult psychiatric mental health nursing and holistic nursing. The curriculum is designed with an emphasis on content requisite for certification by the American Nurses Credentialing Center and the American Holistic Nurses Credentialing Program. Students enrolled in the Integrative Psychiatric Mental Health concentration will have experiences that reflect both the nurse practitioner and the clinical nurse specialist roles associated with the specialty.

## R.N.-M.S. Track

The School of Nursing offers a track in the master's program designed for students who have their R.N. licensure but have not completed the baccalaureate degree. The track includes elements of the R.N.-B.S. program and moves the student expeditiously into M.S. program course work. The student completes the general education requirements for the baccalaureate degree prior to entering the R.N.-M.S. track. The track provides the additional courses in the

major required for the degree and a B.S. degree is awarded after the completion of 30 credit hours of specified course work. All concentrations in the master's program are available to students admitted to this track.

## Admission requirements

To be considered for admission, applicants must hold the following credentials:

- an associate degree in nursing or a diploma in nursing,
- transcripts reflecting the completion of a health assessment course comparable to NURS 261 and a community health nursing course comparable to NURS 415,
- acceptable scores on the GRE Aptitude Test, including all three components (verbal, quantitative and analytical),
- TOEFL scores of greater than 550 (paper score) for international applicants,
- a current, unrestricted registered nurse license in a U.S. state, the District of Columbia, or a U.S. possession or territory, or an equivalent credential in another country,
- graduates of foreign nursing schools who are licensed outside of the United States are required to pass the Qualifying Exam of the Commission on Graduates of Foreign Nursing Schools (CGFNS) prior to application and include the exam report with their application materials,
- professional liability insurance (highly recommended), and
- personal interview (upon request).

## Prerequisite courses

The following courses will be accepted in transfer, only upon a rigorous evaluation of each course for comparability to the B.S. course using defined criteria developed by expert faculty in community health and health assessment. Applicants must provide a copy of the course syllabi and a written statement of how the course met the objectives of the VCU courses. VCU course objectives will be provided to applicants. Otherwise the following courses will be taken as prerequisites for beginning the R.N.-M.S. track:

- NURS 261 Health Assessment or comparable course (two to three credits)
- NURS 415 Community Health Nursing or comparable course (three credits)

## Courses required for the B.S. degree

### General education requirements (taken prior to admission to the R.N.-B.S. track)

	Credits
Communications	
Writing or composition	6
Humanities	
Philosophy, ethics, logic or critical thinking	3
Visual or performing art	3
General humanities	6
Social sciences	
Psychology	3-4
Developmental psychology	3
Sociology	3
Mathematics	
Statistics	3
Sciences	
Laboratory sciences*	8
Anatomy and physiology	8
Microbiology	4
Nutrition	3
Electives	
Any extra credit from required areas, computer science or other liberal arts courses; no more than three credits in physical education or activity courses may be taken	2-3

**Total general education credits 56**

### Nursing courses (undergraduate courses taken in the R.N.-B.S. track)

	credits
NURS 302 Dynamics of Professional Nursing	4
NURS 370 Nursing Theory and Research	3
NURS 475 Professional Issues in Nursing	3
NURS 485 Managerial Theory	3
<b>Total undergraduate nursing credits</b>	<b>13</b>

### M.S. core curriculum component (credits shared for B.S. and M.S. degrees)

	credits
NURS 501 Advanced Professionalism I	1
NURS 512 Advanced Nursing Science	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
NURS 502 Pharmacotherapeutics	3
NURS 508 Advanced Nursing Practice: Systems	3
NURS 503 Advanced Nursing Practice: Psychosocial	3
<b>Total master's credits applied to B.S. degree</b>	<b>22*</b>

\* Not all of these courses are required in each master's program concentration; however, a student must take at least 17 of these credits to meet the B.S. degree requirements.

The remainder of the curriculum (at least 30 credits) is consistent with all requirements of the current M.S. program and is specific to the concentration chosen.

## Clinical facilities

A variety of urban and rural agencies, including community medical centers and state hospitals, public health services, private clinics and offices, federal and state centers and departments, are available for clinical study. These facilities provide generalized and specialized inpatient and ambulatory services. Selection of specific facilities for student experience is based upon curricular and advanced practice certification requirements, the educational needs of the individual student, and the services available.

## Post-master's Certificate Program

This program is available in seven concentration areas: adult health (acute and primary care), child health, family health, nursing administration and leadership, integrative psychiatric mental health nursing, women's health and nursing in faith communities. Applicant's previous master's course work will be evaluated individually to determine the number of credits required to meet overall program requirements.

## Curriculum design

The School of Nursing recognizes that applicants to the post-master's program bring a background of a nursing master's or doctoral degree or are currently enrolled in a doctoral program. The curriculum for each concentration builds upon the knowledge in a previous master's degree including advanced practice, research and theory, and nursing specialty content. The post-master's certificate program allows students to enroll in an advanced practice specialty to pursue additional competencies or a certificate. The curriculum in the post-master's certificate program meets the standards of specialty organizations and the requirements for certification as an advanced practice nurse (nurse practitioner, clinical nurse specialist or other advanced practice roles.)

When applicants are admitted, an evaluation of the transcript is conducted. Each required course in the relevant concentration is compared to the applicant's transcript and a judgment is made whether those course objectives have been fully or partially completed in prior master's or doctoral work. Prior courses that are accepted as evidence of full or partial completion are listed on the program plan. The curriculum plan varies according to clinical focus. This plan will be

signed by the student, the student's adviser and the associate dean for the master's program before the student actually enrolls in the program. Thus, the program of study is agreed upon in advance. The following plans are examples of curricula:

#### Adult Health: Acute Care

NURS 502 Advanced Nursing Practice: Pharmacotherapeutics	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
NURS 633 Common Health Problems of Women	1
NURS 660 Advanced Adult Health I	3
NURS 661 Advanced Adult Health II	4
NURS 663 Advanced Adult Health III	3
NURS 676 Adult Primary Practicum	2
NURS 678 Adult Acute Practicum (two semesters)	6
NURS 679 Advanced Adult Acute Practicum II	3
NURS 682 Women's Practicum I	1
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#### Adult Health: Primary Care

NURS 502 Advanced Nursing Practice: Pharmacotherapeutics	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
NURS 633 Common Health Problems of Women	1
NURS 660 Advanced Adult Health I	3
NURS 661 Advanced Adult Health II	4
NURS 663 Advanced Adult Health III	3
NURS 676 Adult Primary Practicum (two semesters)	6
NURS 677 Advanced Adult Primary Practicum	3
NURS 678 Adult Acute Practicum	2
NURS 682 Women's Practicum I	1
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#### Child Health

NURS 502 Advanced Nursing Practice: Pharmacotherapeutics	3
NURS 503 Advanced Nursing Practice: Psychosocial	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
IDD 600C Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities	3
NURS 633 Common Health Problems of Women	1
NURS 647 Health Promotion and Disease Prevention in Children	2
NURS 648 Management of Acute Problems of Children	3
NURS 649 Chronic Illness and Disability in Children	2
NURS 672 Child Practicum I	3
NURS 673 Child Practicum II	3
NURS 674 Child Practicum III	4
NURS 682 Women's Practicum I	1
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#### Family Health

NURS 502 Advanced Nursing Practice: Pharmacotherapeutics	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
NURS 633 Common Health Problems of Women	3
NURS 634 The Childbearing Woman	2
NURS 647 Health Promotion and Disease Prevention in Children	2
NURS 648 Management of Acute Problems of Children and Adolescents	3
NURS 661 Advanced Adult Health II	4
NURS 670 Primary Care of Families	3
NURS 672 Child Practicum I	3
NURS 676 Adult Primary Practicum	3
NURS 682 Women's Practicum I	3
NURS 684 Family Practicum	4
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#### Nursing Administration and Leadership\*

NURS 505 Advanced Practice Nursing: Computer and Information Technology	1
NURS 655 Nurse as Integrative Leader	2
NURS 681 Nurses as Organizational Leaders	3
NURS 692 Integrative Administrative Systems Practicum I	3
NURS 680 Leading People	3
NURS 693 Integrative Administrative Systems Practicum II	3
NURS 690 Application of Financial Concepts	4
NURS 687 Management Systems and Health Care Outcomes	4
NURS 694 Integrative Administrative Systems Practicum III	4
Accounting elective	3
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	30

\* Nursing administration courses are not offered every year. Students should consult their advisers for a Schedule of Classes.

#### Nursing in Faith Communities

NURS 503 Advanced Nursing Practice: Psychosocial	3
NURS 509 Advanced Nursing Practice: Community	3
NURS 540 Spirituality in Health Care	3
NURS 689 Integrative Systems Practicum	10
NURS 740 Theoretical Perspectives in Healing	3
Elective (theology, religious studies, pastoral care, criminal justice, comparative religion or complementary health care)	3
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#### Integrative Psychiatric Mental Health Nursing

NURS 503 Advanced Nursing Practice: Psychosocial	3
NURS 622 Integrative Psychiatric Mental Health Nursing Practicum	1-3
NURS 623 Integrative Psychiatric Mental Health Nursing Practicum II	1-4
NURS 624 Integrative Psychiatric Mental Health Nursing Practicum III	1-4
NURS 654 Nurse as Integrative Healer	3
NURS 655 Nurse as Integrative Leader	2

NURS 656 Integrative Mental Health Nursing: Management and Treatment of Psychopathology for Advanced Practice Nurses	3
NURS 657 Integrative Mental Health Nursing: Contemporary Practice	3
NURS 658 Complementary Healing Modalities	3
NURS 659 Integrative Mental Health Nursing: Synthesis	4
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	24-32

#### Women's Health

NURS 502 Advanced Nursing Practice: Pharmacotherapeutics	3
NURS 504 Advanced Nursing Practice: Biological	3
NURS 511 Health Assessment for Advanced Nursing Practice	3
NURS 632 Health Promotion in Women	2
NURS 633 Common Health Problems of Women	3
NURS 634 The Childbearing Woman	3
NURS 661 Advanced Adult Health II	3
NURS 676 Adult Primary Practicum I	2
NURS 682 Women's Practicum I	2
NURS 683 Women's Practicum II	4
NURS 685 Women's Practicum III	5
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### Admission requirements

Requirements for admission to the post-master's program includes:

- a master's degree or doctoral degree in nursing,
- graduate degree within the last five years or two years of post-master's clinical practice,
- foreign applicants must have a TOEFL score of greater than 550,
- current license to practice as a registered nurse in Virginia (professional liability insurance is recommended),
- three references from the applicant's graduate program and from employers/supervisors,
- a personal interview may be requested, and
- a complete graduate application must be filed with the School of Graduate Studies. Admission forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

### Academic requirements

- A student may not proceed in the program with a GPA of less than 3.0 or with a grade of less than "B" in any nursing course. Students earning less than "C" are referred to policy 6.4.1 in

the School of Nursing Policy and Information Handbook on the Web: <http://www.nursing.vcu.edu/faculty/policy.htm>.

- An adviser for each student is appointed by the department chair. That adviser will assist the student in program and career planning, registration procedures and certification for graduation.
- The departments of Adult Health Nursing, Integrative Systems and Maternal Child Health Nursing will assist respective students with advanced practice certification.

## Graduation requirements

To be a candidate for the post-master's certificate, students must be recommended by the faculty and must:

- meet academic requirements of the School of Graduate Studies,
- complete all requirements for the prescribed curriculum within five calendar years of the first registration for work to be credited toward the certificate,
- earn at least a "B" or pass grade in all nursing courses,
- earn at least a cumulative average of 3.0 in all work presented for graduation, and
- conform to School of Nursing policies in respect to pass/fail grading for course work.

## Ph.D. Program in Nursing

The goal of the doctoral program in nursing is the preparation of scholars to develop knowledge in the discipline of nursing. The program examines knowledge development in nursing through an understanding of the impact of a wide range of historical influences on the discipline, and through analysis of how emerging societal issues influence knowledge development. Knowledge in the humanities and social sciences and an understanding of knowledge development in other disciplines is viewed as foundational to a full understanding of knowledge development in nursing. Methodologic competency (i.e., knowledge of research designs, methodologies and tools) is also essential to a full understanding of the scope, range and path of knowledge development and the relevance to nursing practice. Substantive areas of study are healing, risk and resiliency, biobehavioral clinical research and immunocompetence.

## Program outcomes

At the completion of the doctoral program, the student will be able to:

1. apply, transmit and generate knowledge in the discipline of nursing,
2. construct, test and modify theories for nursing in the context of social, ethical, scientific, cultural and economic influences,
3. analyze and synthesize knowledge from related disciplines for use in nursing,
4. exhibit scientific integrity in scholarly inquiry, and
5. engage in interdisciplinary collaboration in knowledge development and dissemination.

## Curriculum

### Core content (all students)

#### Philosophy and theory courses

NURS 703 Philosophy and Human Sciences  
NURS 704 Theoretical Structures for Nursing Knowledge  
NURS 705 Theory Construction in Nursing

#### Research methods and statistics

(required of all students)  
NURS 770 Quantitative Research Design  
NURS 772 Qualitative Research Design  
NURS 773 Perspectives on Research Design  
NURS 774 Qualitative Data Analysis  
Advanced statistics or methods  
BIOS/STAT 543 Statistical Methods I  
BIOS/STAT 544 Statistical Methods II  
MICR 510 Scientific integrity

#### Focus of inquiry

(one three-credit introductory course in focus area required)  
NURS 740 Healing  
NURS 750 Risk and Resilience  
NURS 760 Immunocompetence  
Courses selected by student and adviser (six credits) may be taken as NURS 791 and 792  
NURS 797 Directed Research (six credits)

#### Research program development

NURS 776, 777, 778

#### Advanced methods

NURS 771 Instrument Development  
NURS 775 Ethnography  
Elective courses from other disciplines

#### Dissertation

NURS 796 Research Practicum  
NURS 898 Dissertation

Total

credits

9

22

15

3

3

12

64

Each student will be assigned an adviser with related research interests to finalize the student's plan of study. This curriculum

structure requires the student and adviser to make several choices:

- the selection of a focus area,
- the choice of advanced methodological courses, or
- the selection of faculty for directed research or research practicum.

The credits indicated above are in addition to any course prerequisites.

## Admission requirements

All applicants to the Ph.D. Program in Nursing must meet the following admission requirements:

1. Applicants must have both a baccalaureate and a master's degree, one of which must be in nursing. The degree in nursing must be from an accredited school or international equivalent.
2. Have a master's GPA of 3.0 or better on a 4.0 scale.
3. Satisfactory scores on the General Test of the Graduate Record Exam. International applicants must have a TOEFL score of greater than 550.
4. A three-credit graduate-level statistics course with a passing grade of "B" or better.
5. Licensure as a RN. International applicants must have an equivalent credential.

All applicants must complete and/or submit the following materials by Feb. 1 of the year they plan to enter the program:

1. Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.
2. Official transcripts from all previous universities and colleges attended for all graduate and undergraduate work.
3. A typed, personal statement from the applicant summarizing professional and academic experience including prior research experience, research interests, immediate and long-range professional goals, and rationale for pursuing advanced study (see guidelines for writing the personal statement for doctoral admissions).
4. A resume that includes applicant's name and address, past educational degrees, past work experiences, professional affiliations, certifications, honors and awards, presentations, and publications. Use either chronological or reverse chronological order. Use a resume-writing guide to assist in formatting the resume.

5. References from three persons who can knowledgeably comment upon applicant's ability to succeed in an academic program (i.e., former faculty) or who can evaluate applicant's ability to be successful in nursing research. Avoid getting references from ministers or others who are not familiar with professional and academic abilities; from friends, either professional or personal; or from personal health care providers.
6. A personal interview is required.
7. Information regarding external funding for doctoral education that may be available to applicant.

### Post B.S.-Ph.D. entry option

All applicants to the Post B.S.-Ph.D. entry option must meet the following admission requirements:

1. Applicants must have a baccalaureate degree in nursing. The degree must be from an accredited school or international equivalent.
2. Applicants must have a GPA of 3.0 or better on a 4.0 scale.
3. Applicants must have satisfactory scores on the General Test of the Graduate Record Exam. International applicants must have a TOEFL score of greater than 550.
4. Applicants must have the R.N. licensure. International applicants must have an equivalent credential.

### Admission to candidacy

Before admission to candidacy for the doctorate, students must have (1) satisfied the language requirement, if applicable, (2) completed all required course work, (3) successfully completed the comprehensive examination, and (4) fulfilled any additional requirements.

### Comprehensive examinations

The student will request to take the comprehensive examination at the first available testing date following completion of the doctoral course work for the Ph.D. Program (approximately six weeks after the last day of class). The dates for the examination will be posted for the year and will be offered in February, June/July and September/October. The student will request the exam through completion of the Ph.D. Comprehensive Examination Request Form available from the Office of the associate dean for doctoral program and

research or by downloading it from the Web. The student is required to obtain a signature from the adviser who verifies that the student has completed all required courses before submitting the form to the associate dean.

A six or seven member committee of faculty appointed by the associate dean for the doctoral program and research will write and evaluate the exam questions. The committee is composed of faculty for philosophy and theory, research design and methods and the focus areas of risk and resilience, healing, biobehavioral clinical and immunocompetence including the faculty adviser. The examination will have four questions and will not be available to the students before the examination. The examination is an in-class examination (open book) allowing four hours per question (one question per day). All students will answer the same questions for the exam period with the exception of the specific focus question. These questions will test knowledge in the:

1. philosophy and theory,
2. research designs and methods,
3. focus area (general) and
4. focus area (specific to the student's area of interest).

The schedule for the questions is as follows:

- Monday – philosophy and theory
- Tuesday – research designs and methods
- Wednesday – focus (general)
- Thursday – focus (specific)

The administration of the examination is managed through the Office of the Associate Dean and a computer will be available for each student's use in the testing site. Upon completion of each question, the answer is submitted to the associate dean's office. The student will submit a disk with the response to the examination question with the social security number at the top of each page to the office of the associate dean at the end of the allotted time period each day. No names will be included on the examination. The associate dean designee will print the copy of the answers in the student's presence. The four-hour time allotment allows students the opportunity to proofread their response and does not require any further editing. There will be a written examination only with no oral clarification of results.

The entire examination when completed will be forwarded to the comprehensive

examination committee. The examination will be evaluated as pass/fail for each question. The student must receive a pass on all questions in order to pass the examination and must take all parts of the examination during the scheduled period. A passing evaluation by two graders constitutes a pass for each question. In the event of disagreement between the two graders, a third member of the committee will be asked to evaluate the question. The evaluation of the examination will be completed within two weeks after the test administration. The student is notified in writing of the results of the examination by the associate dean for doctoral program and research within one month (30 days) of completion of the exam. The examination will not be returned to the student and a brief statement will be given to students who require a retake. The retake of the examination, if required, will be offered at the next examination administration with different questions. University policy allows for one retake of the examination. In the retake examination, the student will write the questions that they did not receive an evaluation of pass in the earlier administration.

Questions about this process should be directed to the Office of the Associate Dean at (804) 828-0836 or (804) 828-8351.

### Dissertation

The student must conduct a substantial independent investigation and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. Satisfactory completion of the comprehensive examination and a satisfactory oral defense of the dissertation proposal are required prior to commencement of actual work outlined in the proposal. Once approved, the dissertation proposal is similar to a formal contract between the student and dissertation committee about the nature of the dissertation. The dissertation committee must consist of a minimum of four members. Any member of the graduate faculty of the School of Nursing may chair the dissertation committee. Other committee members must include one faculty member from the student's focus area and one member from outside the School of Nursing. An oral defense of the dissertation is conducted by the student's dissertation committee. The student is responsible for preparing the dissertation in accordance with the most current version of the School of Graduate Studies Thesis and Dissertation Manual.

## Nondegree-seeking students

Students who have not been admitted to a graduate program in nursing may be permitted, at the discretion of the School of Nursing, to enroll in individual courses. Only six credits earned as a nondegree-seeking student can be applied to the master's degree or doctor of philosophy degree. Only three credits earned as a nondegree-seeking student can be applied to the post-master's certificate.

## Enrollment

Students may begin study during summer and fall semesters. Students will have an academic adviser appointed and will follow the standard program of study. Once admitted, students are expected to abide by enrollment policies of the School of Graduate Studies.

## Transfer credit

Students may take 12 of the required credits for the respective program at another institution and transfer them to VCU. The School of Nursing will determine the acceptability of courses for transfer credit. Transcript evidence and description of courses are required for review of transfer credit.

## Scholarships, grants and loans

Applications for financial assistance must be filed for all forms of financial assistance, including traineeships. A Free Application for Federal Student Aid (FAFSA) may be obtained from the Financial Aid Department, Virginia Commonwealth University, Richmond, VA 23298-0244.

Limited financial assistance is available through traineeships and scholarships administered by the School of Nursing. An application for financial assistance from the School of Nursing sources will be made available to applicants and enrolled students. The school form must be completed in addition to the form for financial assistance from the Office of Financial Aid.

## Graduate faculty

- Amankwaa, Linda, Assistant Professor, Maternal/Child Nursing  
Ph.D. Georgia State University  
Postpartum depression; postpartum health; and the health and well-being of postpartum mothers.  
African American women; postpartum mothers who have preterm infants.
- Boyle, Ann, Collateral Assistant Professor, Adult Health Nursing  
Ph.D. University of South Carolina  
Care of persons with COPD and their families.
- Coleman, Christopher, Assistant Professor, Integrative Systems  
Ph.D. University of California at San Francisco  
Risk factors and HIV prevention in older African American males.
- Corley, Mary, Associate Professor Emeritus, Integrative Systems  
Ph.D. University of Kentucky  
Ethical work environment, moral distress, patient participation in decision making, transplant tissues.
- Cowling III, W. Richard, Associate Professor, Integrative Systems  
Ph.D. New York University  
The refinement and study of a unitary appreciative healing model for despair in women. Continued refinement of a unitary methodology called appreciative study.
- Cutler, Carol, Collateral Assistant Professor, Integrative Systems  
D.N.Sc. The Catholic University of America  
Depression in adults.
- Grap, Mary Jo, Associate Professor, Adult Health Nursing  
Ph.D. Georgia State University  
Optimizing pulmonary function in critically ill adults, improving outcomes after cardiac surgery.
- Gray, Patricia D., Associate Professor, Adult Health Nursing  
Ph.D. University of Utah  
Critical qualitative approaches, coping with HIV, end-of-life issues.
- Henry, JoAnn K., Associate Professor, Maternal/Child Nursing  
Ed.D. University of Virginia  
Stress in high-risk pregnancy, analysis of health policy.
- Humenick, Sharon S., Professor, Maternal/Child Nursing  
Ph.D. Georgia State University  
Human lactation, childbirth education, relaxation, health risk and resilience.
- Kritek, Phyllis, Professor, Integrative Systems  
Ph.D. University of Illinois  
Conflict resolution, negotiation and mediation as healing practices in health care.
- Langston, Nancy F., Professor and Dean  
Ph.D. Georgia State University  
Quality of life with institutionalized elderly, educational administration in facilitators of scholarly productivity.
- Lewis, Judith A., Associate Professor, Maternal/Child Nursing  
Ph.D. Brandeis University  
Pregnancy after infertility, health policy analysis, regionalization of perinatal care, application of information technology to higher education.
- Mallinson, Kevin, Assistant Professor, Adult Health Nursing  
Ph.D. Johns Hopkins University  
Facilitating healing for gay men living with multiple losses dealing with HIV/AIDS; the health experiences of deaf gay men in context of HIV/AIDS.
- McCain, Nancy L., Professor, Adult Health Nursing  
D.N.S. University of Alabama at Birmingham  
Psychoneuroimmunology, immunocompetence, psychosocial aspects of chronic illness; HIV disease.
- Moon, Martha W., Assistant Professor, Integrative Systems  
Ph.D. University of California at San Francisco  
HIV prevention in vulnerable populations (street youth, African-American youth, sexual minority youth); resiliency; community health.
- Munjas, Barbara A., Professor Emeritus, Integrative Systems  
Ph.D. University of Pennsylvania  
AIDS, chronic mental illness behavior and intervention, quality of life for institutionalized adults, nursing diagnosis.
- Munro, Cindy L., Associate Professor, Adult Health Nursing  
Ph.D. Virginia Commonwealth University  
Interaction of host/micro-organism in infectious processes, molecular genetics, genetic technology and society.
- Pickler, Rita H., Associate Professor, Maternal/Child Nursing  
Ph.D. University of Virginia  
High risk infants, children and families, health promotion and optional development of at-risk children, care giving contexts.
- Roux, Gayle, Assistant Professor, Maternal/Child Nursing  
Ph.D. Texas Woman's University  
Inner strength in women with chronic disease.
- Salyer, Jeanne, Associate Professor, Adult Health Nursing  
Ph.D. Virginia Commonwealth University  
Nursing systems, instrument development, cardiac transplantation, and health promotion.
- Sawin, Kathleen, Associate Professor, Maternal/Child Nursing  
D.N.S. Indiana University  
Chronic illness/disability in childhood/adolescents and impact on their families; women with disabilities; health outcomes in children/adolescents with spina bifida.
- Taliaferro, Donna, Associate Professor, Adult Health Nursing  
Ph.D. Texas Woman's University  
Circadian rhythm and sleep in HIV/AIDS infected persons.
- Tuck, Inez, Professor, Integrative Systems  
Ph.D. University of North Carolina at Greensboro  
Spirituality and healing in persons with chronic or terminal illness.
- Younger, Janet B., Professor, Maternal/Child Nursing  
Ph.D. University of Virginia  
Mastery of stress, response to illness.

## Graduate courses in nursing (NURS)

The course descriptions provided here are for the major in nursing and are restricted to students in this major unless otherwise indicated with permission of instructor. See other sections of this bulletin for courses in other schools and departments.

### NURS 501 Advanced Professionalization I

Semester course; 1 lecture hour. 1 credit. Pre- or corequisites: Admission to the graduate program in nursing. Focuses on socialization to the roles and responsibilities related to advanced practice nursing. Explores applicability of nursing theory to advanced practice nursing.

### NURS 502 Advanced Nursing Practice: Pharmacotherapeutics

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate status or permission of the instructor. Develops the requisite knowledge of pharmacotherapeutics necessary for the safe pharmacological management of common patient problems by the advanced practice nurse.

### NURS 503 Advanced Nursing Practice: Psychosocial

Semester course; 3 lecture hours. 3 credits. Prerequisites: NURS 201 or RN license. Examines and analyzes selected psychosocial theories and research, relating them to advanced practice nursing. Derives nursing strategies for phenomena of concern associated with specialty areas.

### NURS 504 Advanced Nursing Practice: Biological

Semester course; 3 lecture hours. 3 credits. Focuses on the biological changes underlying selected health risks and health problems as a framework for critically appraising health assessment data and for understanding advanced nursing therapeutic strategies.

### NURS 505 Advanced Nursing Practice: Computer and Information Technology

Semester course; 1 lecture hour. 1 credit. Prerequisite: Admission to the Graduate Program in Nursing or permission of instructor. Provides students with knowledge and skills necessary to incorporate information technology into nursing practice and to be successful users of information technology programs and systems. Knowledge of nursing-specific applications will be emphasized. Graded as pass/fail.

### NURS 508 Advanced Nursing Practice: Systems

3 lecture hours. 3 credits. Provides an understanding of the context in which health services are managed and delivered. Explores social, ethical, and political issues affecting current and future nursing care delivery systems. Examines cost effectiveness of nursing care in a variety of settings.

### NURS 509 Advanced Nursing Practice: Community

3 lecture hours. 3 credits. Emphasizes target populations in the community as a perspective for advanced nursing practice. Introduces small area analysis to diagnose and prioritize health needs/problems and to plan, provide, and evaluate care for individuals, families, and population groups. Uses advanced nursing practice skills to examine the need for risk reduction and health promo-

tion, health preservation and rehabilitation among community populations.

### NURS 510 Nursing Ethics

3 lecture hours. 3 credits. Identifies and examines moral dilemmas encountered in professional nursing practice. Examines personal value systems, applies ethical theory and principles to dilemmas in clinical nursing practice: patient's rights, informed consent, confidentiality, quality of life and death and dying. Examines relationships between professional nursing and resolution of moral dilemmas.

### NURS 511 Health Assessment for Advanced Nursing Practice

1 lecture and 2 laboratory hours. 3 credits. Prerequisite: Undergraduate or graduate health or physical assessment course (3 credits). Provides the framework for holistic, culturally relevant assessment of individuals. Focuses on advancing students' knowledge and assessment in health history, risk appraisal, health promotion, psychosocial, developmental and functional assessment and physical examination techniques. Emphasizes the application of diagnostic reasoning skills in assessing deviations from normal in selected content in specialty areas. Includes supervised experiences with advanced clinical assessment skills.

### NURS 512 Advanced Nursing Science

3 lecture hours. 3 credits. Focuses on theory and research in advanced practice with aim of critique and utilization of current theories and findings/outcomes. Emphasizes analysis and synthesis of nursing science in the context of relevant programs, practice problems, issues, and concerns. Reviews major research design and analytic strategies.

### NURS 514/INTL 514 International Perspectives on Community Health in Developing Countries

Semester course; 1 lecture and 2 laboratory hours. 3 credits. This course may be taken for a maximum of six credits in two different world areas. Open to undergraduate (junior or senior level) and graduate students. Explores the impact of national and international policy decisions on the health and well-being of individuals and communities (country varies semester to semester). Examines the relationship of cultural beliefs and values on health-seeking behaviors. Allows students to become immersed in a culture different than their own. Evaluates the impact of international conflict and economic development on the health status of the community. See Schedule of Classes for location.

### NURS 540 Spirituality in Health Care

3 lecture hours. 3 credits. Explores the phenomenon of spirituality in health and illness across cultures and life spans from a framework of humility and respect for multiple world views. Integrates theory and research as well as individual and communal ways of knowing to provide spiritually sensitive care that nurtures wholeness and promotes healing.

### NURS 591 Special Topics

Semester course; 1-3 credits. Explores specific topics in nursing theory and practice.

### NURS 592 Directed Study in Nursing

1-3 credits. Prerequisite: Permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

### NURS 601 Advanced Professionalization II

1 lecture hour. 1 credit. Prerequisite: NURS 501. Facilitates enactment of selected advanced practice role following graduation from the program. Focuses on issues influencing implementation of selected advanced practice role.

### NURS 622 Integrative Psychiatric Mental Health Nursing Practicum

Semester course; 3-9 practicum hours. 1-3 credits. Prerequisites: NURS 502, 503, 504 and 511. Co- or prerequisite: NURS 656. Uses application of diagnostic algorithms for the most common psychiatric symptoms as a framework in the psychopathological assessment of common disorders seen in adolescents, adults and the elderly. Employs clinical assessment tools to assess the psychiatric and psychosocial needs of families and groups considering the biological, environmental, lifestyle, and sociocultural impact on the diagnosis of individuals with acute or chronic primary health care problems.

### NURS 623 Integrative Psychiatric Mental Health Nursing Practicum II

Semester course; 3-12 practicum hours. 1-4 credits. Prerequisite: NURS 622. Co- or prerequisite: NURS 657. Prepares individuals for advanced psychiatric mental health practice by integrating theoretical, clinical and research knowledge in acute and primary mental health care settings. Applies nursing process in advanced psychiatric mental health practice. Explores contemporary somatic and psychotherapies with preceptors and faculty in advanced clinical practice. Emphasizes application of integrated knowledge related to theories and therapeutic techniques for individuals, families and groups, particularly urban and underserved. Experiences selected by preceptors considering individual learning needs and desires of students.

### NURS 624 Integrative Psychiatric Mental Health Nursing Practicum III

Semester course; 3-12 practicum hours. 1-4 credits. Prerequisites: NURS 509 and 623. Co- or prerequisite: NURS 659. Prepares individuals to apply knowledge in primary mental health to urban and underserved populations with acute and chronic conditions. Students employ approaches that address population-specific needs of communities with varied social and cultural contexts. Advanced practice nursing care planned, delivered and evaluated consistent with integrative mental health principles and current research findings. Alternative and complementary approaches incorporated based on relevance and efficacy.

### NURS 627 Critical Care Nursing

Semester course; 2 lecture and 1 laboratory hours. 3 credits. Prerequisites: Licensure as a registered nurse; Advanced Cardiac Life Support Certification (ACLS, PALS or NALS); NURS 511 Health Assessment, and NURS 504 Advanced Practice Nursing: Biological. Focuses on critical care technologies that are used in care of the critically ill. Course content will include the theoretical principles on which the selected technologies are based as well as discussions of the practical use and troubleshooting of the technologies presented. Provides experience in critically evaluating research and evidence-based guidelines related to commonly used critical care technologies.

**NURS 632 Health Promotion in Women**

1-2 lecture hours. 1-2 credits. Addresses issues that affect the health of women throughout the life cycle. Reflects the historical, developmental, political, psychological, and sociological perspectives of understanding the condition of women in our society and the impact on their health care needs. Emphasizes the advanced practice role in health promotion and early detection of health problems, sociopolitical variables that impact women's health, and the application of alternative paradigms in health care practice.

**NURS 633 Common Health Problems of Women**

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisites: NURS 504: Biological, NURS 511. Provides content on common physical and psychosocial health and illness changes of women. Emphasizes health promotion and maintenance, as well as illness prevention, detection and management approaches. Includes current nursing, medical, and pharmacological diagnostic and management modalities. Reinforces essential content and clinical judgment application for advanced nursing practice through case study discussions.

**NURS 634 Advanced Practice: The Childbearing Woman**

Semester course; 2 lecture credits for Family Health students and 3 lecture credits for Women's Health students. 2-3 credits. Offered: Spring. Prerequisite or corequisite: NURS 501, 502, 504 and 511. Note: the last third of the course, which focuses on high risk perinatal conditions, would be elective for the Family Health students but required for the Women's Health students. Focuses on management of potential and actual health problems of women as members of families and their newborns during the perinatal period, pregnancy, labor, delivery, the postpartum and neonatal periods. Nursing assessment, diagnosis and intervention related to health promotion, treatment and prevention of perinatal problems are addressed. Emphasizes the integration of theories and research in perinatal health care and the role of the advanced practice nurse in caring for these clients.

**NURS 647 Health Promotion and Disease Prevention in Children**

1-2 lecture hours. 1-2 credits. Prerequisites/Corequisites: NURS 501, NURS 503, NURS 511. Focuses on health needs of well children from infancy through adolescence, and their families. Emphasizes health promotion and disease prevention strategies, integrating the concepts of development, family systems, and individual and family adaptation to change. Develops a student's skills in pediatric screening and developmental assessment. Stresses collaborative decision making with children and families.

**NURS 648 Management of Acute Problems of Children and Adolescents**

1-3 lecture hours. 1-3 credits. Prerequisites: NURS 504, NURS 511. Focuses on management of advanced nursing practice related to the management of common developmental, health and illness changes of children and adolescents. Includes pathophysiological, pharmacological, and nutritional management implications. Emphasizes the development of diagnostic reasoning and critical thinking skills in the management of common health problems, using selected organizing frameworks.

**NURS 649 Chronic Illness and Disability in Children**

1-2 lecture hours. 1-2 credits. Prerequisites: NURS 501, NURS 503, NURS 504I, NURS 511, NURS 512, NURS 647, NURS 648. Prepares the student to manage the care of children and adolescents with chronic illness/disability across health care settings. Integrates well child care with the management of the chronic conditions.

**NURS 654 Nurse as Integrative Healer**

Semester course; 6 seminar hours. 3 credits. Pre- or corequisite: Admission to graduate program or permission of instructor. Focuses on understanding and application of principles derived from the art and science of integrative healing to self-care and care of others as critical to the role of advanced practice nurse in mental health and holistic nursing. Provides opportunities for self-exploration and awareness, modeling a wellness lifestyle, and applying practices that support the well-being of others. Uses seminar dialogues, participatory learning strategies and demonstrations as primary modalities of learning. Designed for continuing enrollment for one summer session and two academic semesters. Graded "CO" during summer and fall.

**NURS 655 Nurse as Integrative Leader**

Semester course; 4 seminar hours. 2 credits. Prerequisite: Admission to graduate program or permission of instructor. Explores central theories and practices of leadership with emphasis on implications for the advanced practice nurse. Explores student's capacity for leadership, including contemporary contexts and personal propensities, strengths, and deterrents to effective leadership practice. Includes learning experiences designed to enhance student's self-understanding as leader and provide culturally diverse urban arena for practicing emerging competencies. Requires an action plan designed, in consultation with faculty mentor, to systematically improve leadership skills over two semesters. Designed for continuous enrollment for two semesters, graded "CO" during the fall.

**NURS 656 Integrative Mental Health Nursing: Management and Treatment of Psychopathology for Advanced Practice Nurses**

Semester course; 3 lecture hours. 3 credits. Prerequisite: NURS 502, NURS 504 or permission of instructor. Synthesizes advanced practice knowledge relevant to the primary care of individuals with psychiatric disorders from a neurobiological and psychopharmacologic perspective. Integrates diagnostic algorithms with biological and psychological theories and research findings pertinent to care of individuals. Addresses knowledge needed for the assessment, diagnosis and management of culturally diverse clients with psychiatric disorders in primary care settings. Examines neurobiology in the context of experience.

**NURS 657 Integrative Mental Health Nursing: Contemporary Practice**

Semester course; 3 lecture hours. 3 credits. Prerequisites: NURS 502, 503, 504, 511, 512, 540 and 656. Pre- or corequisites: NURS 654 and 658. Prepares individuals for advanced psychiatric mental health nursing practice by integrating theoretical, clinical, and research knowledge for primary mental health care and clinical management of acute and chronic mental health conditions. Explores advanced nursing assessment, classifications and interventions from cultural perspectives in a variety of settings. Emphasizes urban

and underserved populations. Covers standards and scope of advanced practice psychiatric mental health nursing with emphasis on clinical management, policy-practice relationships and reimbursable services. Examines knowledge of theories and therapeutic techniques for individuals, families and groups within an integrative context for advanced nursing practice and interdisciplinary leadership.

**NURS 658 Complementary Healing Modalities**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the graduate program or permission of the instructor. Critically examines complementary health strategies from a variety of perspectives including social, historical, cultural, political and economic contexts. Analyzes philosophical, theoretical and research literature associated with the use of complementary healing modalities. Explores frameworks for advanced nursing practice that incorporate tenets of healing modalities. Students will have the opportunity to select and examine a complementary health strategy for in-depth study and potential application.

**NURS 659 Integrative Mental Health Nursing: Synthesis**

Semester course; 4 lecture hours. 4 credits. Prerequisites: NURS 508, 509, 656 and 657. Co- or pre-requisites: NURS 624 and 655. Focuses on theory and practice of integrative mental health nursing and its roll in addressing acute and chronic conditions from a population-specific perspective. Integrates and synthesizes psychosocial and holistic theories, research, and knowledge for advanced primary mental health practice with a community focus. Students will plan care based on integrative assessments and incorporating holistic strategies with an emphasis on urban and underserved communities. A capstone project reflecting a synthesis of integrative nursing knowledge for advanced practice will be conducted and presented.

**NURS 660 Advanced Adult Health I**

3 lecture hours. 3 credits. Pre- or corequisites: NURS 501, 504 and 511. Focuses on advanced nursing assessment and therapeutics across the life span from adolescence to old age. Applies theories, concepts and research findings related to health promotion, health protection and disease prevention as a basis for clinical decision making with adolescent and adult patients and their families within a variety of care settings.

**NURS 661 Advanced Adult Health II**

1-4 lecture hours. Variable; 1-4 credits. Prerequisites: NURS 511, NURS 501 and NURS 504. Provides content on selected common health and illness changes encountered in primary/ambulatory care settings using clinical simulations. Focuses on increasing students' knowledge and clinical decision-making skills in order to promote health, accurately diagnose, prevent and manage these common problems.

**NURS 663 Advanced Adult Health III**

1-3 lecture hours. Variable; 1-3 credits. Prerequisites: NURS 511, NURS 501, NURS 504 and NURS 661. Provides content on selected common health and illness changes encountered in acute care settings using clinical simulations. The focus of this course is on increasing students' knowledge and decision-making skills in order to accurately diagnose, prevent, and manage these common acute and chronic problems.



**NURS 668 Advanced Nursing Therapeutics for Altered Immunocompetence**

3 lecture hours. 3 credits. Prerequisite: NURS 504 or permission of instructor. Analyzes concepts and factors related to the phenomenon of immunocompetence. Examines the contribution of advanced nursing practice to patient outcomes in selected clinical problems such as infection, malignancy, hypersensitivity, autoimmunity, transplantation and HIV infection. Evaluates clinical problems from both a theoretical and clinical perspective, incorporating biological, psychosocial, ethical, cultural and health systems aspects.

**NURS 670 Primary Care of Families**

1-3 lecture hours. 1-3 credits. Prerequisites: NURS 501, NURS 503, NURS 504, NURS 511, NURS 512, NURS 647, NURS 648, NURS 633. Addresses the synthesis of theoretical and research bases for advanced nursing practice with families. Focuses on the care of the individual and their family throughout the life span and across the health continuum, with special emphasis on the advanced evaluation of families and their health needs.

**NURS 672 Child Practicum I**

1-3 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 501, NURS 503, NURS 504, NURS 511. Pre- or corequisites: NURS 502, NURS 647, NURS 648. Focuses on the synthesis of theory and application and evaluation of knowledge related to the primary care of children. Emphasis on beginning skill in assessment and management of well children and common acute problems of children and adolescents. Major focus on assessment. Student expected to be able to deliver well child care in most situations using standards of care and close preceptor involvement. Expected to develop skill in pediatric history taking, developmental assessment and physical assessment and beginning skill in management of selected conditions. Develops beginning skill in management of common well child and behavioral issues. Clinical placements with preceptor(s) made by faculty based on area of role preparation declared by student.

**NURS 673 Child Practicum II**

1-3 clinical hours. 1-3 credits (45 clinical hours per credit). Prerequisites: NURS 501, NURS 503, NURS 504, NURS 511, NURS 647, NURS 648, NURS 672. Pre- or corequisite: NURS 502. Focuses on the synthesis of theory and application and evaluation of knowledge related to the primary care of children; builds on previously developed assessment skills. Adds assessment of adolescent gynecology and sexuality. Student increases ability to manage more complex behavioral and well child issues. Student is expected to manage a wide variety of acute pediatric conditions with moderate preceptor input. Clinical placements with preceptor(s) made by faculty based on area of role and preparation declared by student.

**NURS 674 Child Practicum III**

1-4 clinical hours. 1-4 credits (45 clinical hours per credit). Prerequisites: NURS 501, NURS 502, NURS 503, NURS 504, NURS 511, NURS 647, NURS 648, NURS 672, NURS 673. Pre- or corequisites: NURS 508, NURS 512, NURS 601, NURS 649. Focuses on advanced clinical management of children in a variety of care settings. Student refines both assessment and management skills, requiring minimal preceptor input by the end of the semester. Extends skills to the management of children and their families dealing with chronic illness. Manages a wide range of complex well child and behavioral issues as well

as children with a wide variety of acute illnesses. Clinical placements with preceptor(s) made by faculty based on area of role preparation declared by student.

**NURS 675 Adult Immunocompetence Practicum I**

1-3 clinical hours. 1-3 credits. May be repeated. Pre- or corequisites: NURS 661, NURS 511, or with permission of instructor. Focuses on the synthesis, application, and evaluation of knowledge for providing primary and/or acute health care to a target population of adults with actual or potential problems associated with alterations in immunocompetence. Emphasis is on the development of research and theory based advanced nursing practice. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Practicum is planned in relationship to the student's area of interest and role preparation. Practicum is repeated in order to address the achievement of competencies with a designated adult population and at a more advanced level.

**NURS 676 Adult Primary Practicum**

90-270 clinical hours. 2-6 credits. May be repeated. Pre- or corequisites: NURS 502, NURS 511, NURS 661. Focuses on the synthesis of theory and application and evaluation of this knowledge with a target population in a variety of primary care settings. Provides opportunities for achievement of intermediate competencies in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. May be repeated to obtain sufficient practicum hours for certification.

**NURS 677 Advanced Adult Primary Practicum**

90-255 clinical hours. 2-5 credits. Prerequisite: NURS 676. Focuses on advanced clinical management of a patient population in a selected primary care setting. Provides opportunities for achievement of final competencies in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Performance at the advanced level is required. Gives the opportunity to plan the practicum in relation to the student's clinical area of interest and role preparation.

**NURS 678 Adult Acute Practicum**

90-270 clinical hours. 2-6 credits. May be repeated. Pre- or corequisites: NURS 502, NURS 511, NURS 663. Focuses on the synthesis of theory and application and evaluation of this knowledge with a target population in a variety of acute care settings. Provides opportunities for achievement of intermediate competencies in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. May be repeated to obtain sufficient practicum hours for certification.

**NURS 679 Advanced Adult Acute Practicum**

90-225 clinical hours. 2-5 credits. Prerequisite: NURS 678. Focuses on advanced clinical management of a patient population in a selected acute care setting. Provides opportunities for achievement of final competencies in an advanced nursing practice through supervised clinical experiences with a preceptor. Performance at the advanced level is required. Gives the opportunity to plan the practicum in relation to the student's clinical area of interest and role preparation.

**NURS 680 Leading People**

Semester course; 3 lecture hours. 3 credits. Prerequisite: NURS 655 or permission of instructor.

Examines the effective leadership and application of management theory and skills in the development of a high performing group of both professional and support staff within health care. Examines issues related to cultural diversity and empowerment for optimal performance within the complex urban health care setting.

**NURS 681 Nurses as Organizational Leaders**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the graduate program or permission of instructor. Explores organizational and individual factors that influence nursing leadership and administrative roles. Analyzes the relationships among major organizational variables and stakeholders and their impact on the design and management of a nursing department.

**NURS 682 Women's Practicum I**

1-4 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 502, NURS 511, NURS 632, NURS 633. Focuses on the beginning synthesis of theory and application of advanced nursing practice and evaluation of knowledge in the care of women clients, including well-women gynecologic and health promotion care, management of uncomplicated acute gynecologic needs/problems of women, and diagnosis and management of uncomplicated prenatal and postnatal care. Care of commonly encountered needs/problems of women is based on standards of AWHONN and ACOG. Provides opportunities for achievement of beginning competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for the practicum to be planned in relation to the student's area of interest in women's health and role preparation (nurse practitioner or clinical nurse specialists).

**NURS 683 Women's Practicum II**

1-4 clinical hours. 1-4 credits (45 clinical hours per credit). Prerequisites: NURS 682, NURS 676, NURS 632, NURS 633. Focuses on the intermediate and advanced synthesis of theory and application of advanced nursing practice and evaluation of knowledge in the care of women with more complex reproductive and gynecologic and more general nonreproductive needs/problems. Care for commonly encountered conditions of women is based on standards of AWHONN and ACOG. Provides opportunities for achievement of intermediate and advanced competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for the practicum to be planned in relation to the student's area of interest in women's health and role preparation (nurse practitioner or clinical nurse specialist). Selected experiences will be explored focusing on teaching, case management, and leadership.

**NURS 684 Family Practicum**

1-4 clinical hours. 1-4 credits (45 clinical hours per credit). Prerequisites: NURS 647, NURS 648, NURS 633, NURS 661, NURS 502, NURS 672, NURS 676, NURS 682, NURS 670. Pre- or corequisite: 2 credits of this practicum can be taken in the summer immediately preceding NURS 670 with the consent of the student's adviser. The remaining 2 credits must be taken concurrent with 670 in the following fall semester. Focuses on the achievement of final clinical objectives for the concentration. Provides opportunities for achievement of these competencies as an advanced nursing practice in the family concentration through faculty supervised clinical experiences with a preceptor.

**NURS 685 Women's Practicum III**

Semester course; 45 clinical hours per credit. 1-5 credits; may be repeated. Prerequisite: NURS 683. Prepares student for the transition to advanced practice by applying knowledge in the care of women. Care of conditions in women is based on standards of AWOHNN and ACOG. Provides opportunities for achievement of advanced competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for practicum to be planned in relation to the student's area of interest and role preparation (nurse practitioner or clinical nurse specialist). Selected experiences will be explored focusing on teaching, case management and leadership. Grade as pass/fail.

**NURS 686 Emerging Clinical Issues in Patient Management**

1 seminar hour and 2 clinical hours. 3 credits. Pre- or corequisites: NURS 501, 503, 508, 511, 512. Examines the nurse case manager's role related to emerging clinical issues in the delivery of patient care and discharge planning, and explores community resources as a source of support for patients and families.

**NURS 687 Management Systems and Health Care Outcomes**

Semester course; 4 lecture hours. 4 credits. Prerequisites: NURS 508 and permission of instructor. Focuses on the effective management of human, material and fiscal resources in a competitive institutional environment. Evaluates selected approaches to assessing the quality of nursing and patient outcomes using information technology. Examines issues related to obtaining and organizing clinical and administrative data to support decision making. Takes a comprehensive approach to program and business planning.

**NURS 688 Perinatal Practicum**

1-3 clinical hours. 1-3 credits (45 clinical hours per credit). Focuses on the application of theory and the clinical management of high risk perinatal families. Addresses the application of nursing process by the advanced practice nurse to individuals and families experiencing complex problems during the perinatal period. Provides the opportunity to augment prior clinical skills and experiences related to management of perinatal clients.

**NURS 689 Integrative Systems Practicum**

3-6 lecture hours. 3-6 credits. Pre- or corequisite: Permission of instructor. Focuses on the application of nursing knowledge within the integrative systems specialties with a targeted population in a variety of settings. These settings may include health care and community organizations. Provides opportunities for achievement of competencies in advanced nursing practice through faculty-supervised clinical experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. Focuses on the evaluation of specific outcomes determined by the faculty and student. Provides an opportunity for practice to be repeated with either an additional population or at a more advanced level.

**NURS 690 Application for Financial Concepts**

Semester course; 4 lecture hours. 4 credits. Prerequisite: NURS 508 or permission of instructor. Provides an understanding of financial concepts for nurse leaders and includes the application of financial

principles to health care organizations and the impact of these applications on patient outcomes.

**NURS 691 Nursing Research Practicum**

3 laboratory hours. 3 credits. Prerequisite: NURS 512. Permission of instructor required. Participates in ongoing research. Implements research with faculty direction and supervision.

**NURS 692 Integrative Administrative Systems Practicum I**

Semester course; 45 clinical hours per credit. 3 credits. Prerequisite: Permission of instructor. Focuses on the application of nursing knowledge in a variety of settings within the integrative systems specialty of Nursing Administrative and Leadership. Practicum focuses on the negotiation of learning objectives and the definition of a project for an organizational change to be implemented in the subsequent semesters of practice under the supervision of faculty and the preceptor. The student is required to complete an organizational assessment including plans for further data collection and analysis and delineation of personal leadership roles that the student assumes in implementing the change. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised administration and leadership experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. Focuses on the evaluation of specific outcomes determined by the faculty and student.

**NURS 693 Integrative Administrative Systems Practicum II**

Semester course; 45 clinical hours per credit. 3 credits. Prerequisite: NURS 692. Focuses on the application of nursing knowledge in a variety of settings within the integrative systems specialty of Nursing Administrative and Leadership. Practicum focuses on the analysis of primary and secondary data related to the project negotiated in Practicum I and the development of a plan to implement the selected organizational project. The student will identify the necessary skills and competencies appropriate to implementing the plan. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised administration and leadership experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. Focuses on the evaluation of specific outcomes determined by the faculty and student.

**NURS 694 Integrative Administrative Systems Practicum III**

Semester course; 45 clinical hours per credit. 4 credits. Prerequisite: NURS 693. Focuses on the application of nursing knowledge in a variety of settings within the integrative systems specialty of Nursing Administrative and Leadership. Practicum focuses on the execution of the plan for the organizational project. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised administration and leadership experiences with a preceptor. Student will demonstrate the synthesis of knowledge gained from previous courses and practica experiences. Focuses on the evaluation of specific outcomes determined by the faculty and student.

**NURS 703 Philosophy of Human Sciences**

3 lecture hours. 3 credits. Prerequisite: Admission to the doctoral program. Critically analyzes philosophic perspectives and their relationship to human sciences; emphasizes analysis of the underlying epistemology and ontological assumptions of various philosophies. Explores philosophies of science and their influence on the emergence of knowledge in the human sciences, using nursing science as an example.

**NURS 704 Theoretical Structures for Nursing Knowledge**

3 lecture hours. 3 credits. Pre- or corequisite: NURS 703. Analyzes the structure of nursing knowledge through the study and critique of concepts, theories and conceptual models. Explores the function of theory development in development of nursing knowledge. Evaluates the relationships among theories and forms of knowledge and evidence and explanation.

**NURS 705 Theory Construction in Nursing**

3 lecture hours. 3 credits. Pre- or corequisite: NURS 704. Evaluates the variety of theory construction approaches available to the nursing scholar for consideration in the design of a program of inquiry. Prepares students to select an approach for theoretical development of an individual program of scholarly inquiry. Supports the conceptual and theoretical groundwork for dissertation research.

**NURS 720 Foundations of Biobehavioral Clinical Research**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the doctoral program or permission of instructor. Focuses on the interaction of biology and behavior. Examines conceptual models and assumptions guiding bench, exploratory and experimental approaches designed to enhance function and development, and to prevent complications. Explores biobehavioral clinical research as translational nursing research to improve nursing practice and clinical outcomes. Introduces considerations related to methodology and measurement in biobehavioral clinical research.

**NURS 721 Biobehavioral Measures in Clinical Research**

Semester course; 3 lecture hours. 3 credits. Focuses on the application of biobehavioral measures in clinical research. Includes understanding theoretical foundations of measures as well as assessment of accuracy and precision of measures. Particular emphasis placed on measures of function, development and outcomes. Examples include clinical, observational and biological measures.

**NURS 730 Systems Science in Health Care**

3 lecture hours. 3 credits. Focuses on the interrelationships among groups, organizations and communities within the larger societal context. Examines philosophies, theories, methodologies and applications as they apply to understanding systems. Provides the foundation for conceptual model building and application of systems principles to specific health care problems, situations and organizations.

**NURS 740 Theoretical Perspectives in Healing**

3 lecture hours. 3 credits. Critically analyzes paradigmatic and theoretical perspectives related to healing processes. Using collaborative inquiry, explores models of healing. Describes the centrality of healing in relation to individuals, communities, cultures and organizations. Offers frame of reference for students to pursue a program of inquiry within the domain of healing.

**NURS 742 Unitary-transformative Dimensions of Healing**

3 lecture hours. 3 credits. Presents an overview of the critical elements and assumptions of a unitary-transformative perspective and its relevance for a science and art of healing. Describes the development and evolution of the unitary-transformative paradigm through nursing theories as examples. Employs unitary science to contextualize evolving healing theory and practice. Engages students in developing conceptual and theoretical thinking to inform programs of healing inquiry.

**NURS 750 Risk and Resilience Across the Life Span**

3 lecture hours. 3 credits. This course explores risk and resilience from a theoretical perspective across the life span drawing on nursing and related disciplines. The emphasis is on theoretical perspectives, critical analyses of measurement strategies, and applications to research and practice.

**NURS 760 Foundations of Immunocompetence**

3 lecture hours. 3 credits. Provides in-depth study of immunocompetence as a phenomenon critical to the development of nursing science. Focuses on the biological and developmental basis for immunocompetence, multidimensional relationships among the immune and other physiological and psychosocial systems, and consequences of alterations in immunocompetence. Examines the theoretical basis for interventions designed to influence alterations in immunocompetence. Analyzes methodology and research design issues related to the study of immunocompetence.

**NURS 761 Research and Practice in Psychoneuroimmunology**

3 lecture hours. 3 credits. Prerequisites: Graduate standing with at least one major course in immunocompetence, neuroscience, immunology, foundations of psychoneuroimmunology. Ph.D. in nursing students must have completed NURS 760 Foundations of Immunocompetence. This course is designed to explore psychoneuroimmunology (PNI) as a field of study and as a potential paradigm for both basic research and health-related research and practice. Emphases will include the psychophysiological processes underlying PNI, methodological issues and approaches for PNI-based research, and applications of the PNI framework within the health-related disciplines.

**NURS 770 Quantitative Research Design**

3 lecture hours. 3 credits. Prerequisite: NURS 773, BIOS 543 and BIOS 544. Provides advanced knowledge and skills for critical decision making in the design and implementation of quantitative health care research. Analyzes various quantitative research designs regarding ability to address phenomena of concern to nursing or health care. Presents a range of strategies and substantive knowledge for scientists to launch programs of quantitative inquiry.

**NURS 771 Instrument Development**

2 lecture and 1 laboratory hour. 3 credits. Prerequisites: SOC/STAT 508 or 608 (or equivalent). This course is open to non-nursing students with permission of the instructor. Focuses on theoretical foundations underlying development and psychometric evaluation of instruments measuring psychosocial phenomena. Provides simulated experiences scale construction as well as in PC- and main-frame based computer-aided evaluation of relevant measurement properties.

**NURS 772 Qualitative Research Design**

3 lecture hours. 3 credits. Prerequisite: NURS 773 or permission of the instructor. Provides advanced knowledge and skills for critical decision making in the design and implementation of qualitative health care research. Provides a context for the study of phenomena of concern to the individual and discipline through scholarly debate, dialogue and reflection. Presents range of strategies and substantive knowledge for scientists to launch programs of qualitative inquiry.

**NURS 773 Perspectives on Research Design**

3 lecture hours. 3 credits. Placement: Summer session, first (full-time year). Pre- or corequisites: NURS 703, NURS 704, NURS 705, or permission of instructor. Analyzes philosophical foundations of a variety of research designs. Explores assumptions underlying the selection and evaluation of quantitative and qualitative designs. Focuses on the epistemological, ontological and methodological foundations of research design.

**NURS 774 Qualitative Data Analysis**

3 lecture hours. 3 credits. Pre- or corequisites: NURS 773 and 772. Provides advanced knowledge and skills for qualitative data analysis. Approaches qualitative analytical processes from a variety of theoretical and methodological perspectives. Provides opportunity in analyzing qualitative data.

**NURS 775 The Ethnographic Approach to Knowledge Generation in Nursing**

3 lecture hours. 3 credits. Pre- or corequisites: NURS 772 and 774. A critical exploration of ethnography as a qualitative approach for studying nursing phenomena and generating nursing knowledge from a cultural perspective. Includes the critique of the epistemological, philosophical and ontological understandings of ethnography and an in-depth description of the traditional method. Evolving approaches for conducting ethnographic research will be discussed.

**NURS 776 Research Program Development Seminar I**

Seminar course; 1 credit. Explores the multiple roles in establishing a program of research and the various career-development stages of a scholar.

**NURS 777 Research Program Development Seminar II**

Seminar course; 1 credit. Prerequisite: NURS 776. Focuses on collaboration within the research team and in the larger research community, leadership in the research team, the peer review process and knowledge dissemination.

**NURS 778 Research Program Development Seminar III**

Seminar course; 1 credit. Prerequisite: NURS 777. Focuses on development of the prospectus of the dissertation.

**NURS 780 Patient Care Systems and Patient Outcomes**

3 lecture hours. 3 credits. Prerequisites: NURS 508, equivalent or permission of instructor. Examines administration concepts relevant to systems of patient care. Focuses on the approaches, including program evaluation, for measuring patients outcomes affected by nursing and multidisciplinary collaboration.

**NURS 781 Organizational Analysis in Nursing**

3 lecture hours. 3 credits. Prerequisite: NURS 508, 681 or equivalent (i.e., graduate course in organizational theory); or permission of instructor. Analyzes current paradigms guiding nursing systems research. Evaluates concepts and theoretical models that attempt to explain organizational functioning and that are of particular usefulness in developing a substantive body of knowledge.

**NURS 782 Analysis of Health Care Policy as a Factor in Nursing Practice**

3 lecture hours. 3 credits. Analyzes global and national issues in health care policy. Applies traditional and emerging models to policy issues. Examines policies having implications for nursing practice research and administration. Focuses on the environment of health care policy development, the agencies and leadership of policy development and implementation, and nursing's role in policy development, implementation, and evaluation.

**NURS 791 Special Topics**

3-6 credits; may be repeated. Prerequisite: Admission to doctoral program and permission of instructor. Explores specific topics in nursing.

**NURS 792 Directed Study in Nursing**

variable credit; 1-6 credits. Course may be repeated. A minimum of three credits is required as a substitute for a required focus of inquiry course. A maximum of six credits is allowed. Prerequisites: Admission to doctoral program and permission of instructor. Independent study in specific area of nursing developed under the supervision of a member of the graduate faculty. Graded as pass/fail.

**NURS 796 Research Practicum**

Clinical hours. Variable credit; 1-6 credits. May be repeated. A minimum of three credits is required. Provides a mentored research experience in areas of faculty research expertise. Graded S, U or F.

**NURS 797 Directed Research**

Variable credit; 1-6 credits. May be repeated. A minimum of six credits is required. Provides a mentored research experience in an area of student-selected research. Graded S, U or F.

**NURS 798 Thesis**

6 credits. The master's thesis constitutes carefully planned and executed research under the supervision of an adviser and in conjunction with a thesis committee. The student writes and presents the required thesis in the area of clinical nursing interest.

**NURS 898 Dissertation**

Variable credit; 1-12 credits. A minimum of 12 credits is required. Prerequisite: Admission to candidacy. Original research conducted under the supervision of an adviser and in conjunction with a dissertation committee.



# School of Pharmacy

## Graduate Programs

The School of Pharmacy was established officially in 1898; the University College of Medicine had a school of pharmacy when it opened in 1893. The two-year curriculum gave way to a three-year program in 1925, and in 1932 the school required four years of college work and a bachelor of science degree was awarded. In 1960, the program lengthened to a five-year course leading to a bachelor of science in pharmacy (Pharm.D.) degree. In 1975, authority was granted to offer to selected students a six-year program leading to the doctor of pharmacy degree and this degree program was adopted as the only professional offering by the school in 1995. The School of Pharmacy currently enrolls students in a four-year professional doctor of pharmacy program curriculum following completion of at least two years of pre-professional studies taken at VCU or elsewhere. In 1996 a part-time doctor of pharmacy program was offered that permits current bachelor of science in pharmacy degree holders to earn the doctor of pharmacy degree in a nontraditional format requiring students to come to campus infrequently. Since 1971, all pharmacy students have participated in a clerkship program. Students spend their final year in a variety of practice settings under the supervision of highly qualified faculty preceptors.

The authority to award graduate degrees in the pharmaceutical sciences was granted by the Graduate Council in 1952. Departments in the school have the responsibility for administering a graduate program leading to the M.S. and Ph.D. in pharmaceutical sciences. This program includes areas of specialization in medicinal chemistry, pharmaceuticals, pharmacotherapy and pharmacy administration. These programs provide the preparation and research experience for academic, governmental and industrial careers. Graduate degrees in pharmaceutical sciences do not provide eligibility for licensure as a pharmacist.

Students may elect to pursue a joint Pharm.D./M.S. or Pharm.D./Ph.D. program. Such students must apply to, and be accepted by, both programs separately.

### Statement of purpose

The School of Pharmacy at Virginia Commonwealth University exists to provide exceptional programs benefiting the commonwealth of Virginia and society by offering the highest quality education and training for the development of health care practitioners, scientists, professional leaders and responsible citizens. These individuals are committed to shaping the health care world of tomorrow while serving society's health care needs today.

### Mission statement

The mission of the VCU School of Pharmacy fully supports the mission and goals of the university and the Medical College of Virginia Campus. The school's mission is to provide professional, graduate and postgraduate education, conduct pharmaceutical and biomedical research, and provide patient care and public service.

The school strives to provide an educational environment that encourages the following:

- excellence in scholarship
- excellence in teaching
- diversity and respect among students and faculty
- commitment to the various needs of students
- commitment to service within the school, university, the profession and the community
- quality direct patient care experiences within the curriculum
- commitment to fostering the concept and importance of lifelong learning

Therefore, the school shares with teaching, the interdependent and almost inseparable objectives of research, service and patient care.

### Facilities

The School of Pharmacy is located in the Robert Blackwell Smith Jr., Building at 12th and East Clay streets. This building, which is

410 N. 12th St. • P.O. Box 980581  
Richmond, VA 23298-0581  
(804) 828-3000 • Fax (804) 828-7436  
<http://www.pharmacy.vcu.edu>

#### Victor A. Yanchick

Dean  
B.S., M.S., Ph.D.

#### Thomas P. Reinders

Associate Dean for Student Affairs  
B.S., Pharm.D.

#### William E. Smith

Associate Dean for Administrative Affairs  
Pharm.D., M.P.H., Ph.D.

#### Andrew L. Wilson

Associate Dean for Institutional Program  
Development  
B.S., Pharm.D.

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named in honor of a distinguished former dean of pharmacy, former president of the Medical College of Virginia, and former provost of the MCV Campus, was completed in 1984 with the help of contributions from many alumni and friends of the School of Pharmacy. The major library holdings are in the Tompkins-McCaw Library at 12th and East Clay streets.

Location in a major health sciences center provides excellent opportunities for interdisciplinary research and access to clinical facilities. The school is well equipped for graduate

research and provides leadership to the Institute for Structural Biology and Drug Discovery at the Biomedical Research Park. The institute makes use of synthetic medicinal chemistry, X-ray crystallography, NMR, protein and nucleic acid chemistry, bacterial enzymology and molecular pharmacology to promote drug development. Several businesses have been spawned through the institute and two new drugs have entered clinical trials.

The Department of Pharmacy supports the Center for Drug Studies (CDS), a fully staffed facility for conducting Phase 1-3 research in humans.

## Programs

### Graduate

The school offers programs of graduate study leading to the degrees of master of science and doctor of philosophy. Students may specialize in pharmacokinetics, pharmaceuticals, biopharmaceutical analysis, medicinal chemistry, pharmacotherapy or pharmacy administration.

### Professional

The school offers the doctor of pharmacy degree through two program pathways. Students who do not have a B.S. degree in pharmacy enroll in the first professional program which is completed in four years of full-time study at the school following completion of the two-year minimum pre-pharmacy requirements. Students holding the bachelor of science in Pharmacy degree who wish to upgrade their professional skills and degree enroll in a program, which can be completed through part-time study in a nontraditional program. Students interested in the professional degree should consult the appropriate section of this bulletin for further information.

## Graduate program admission requirements

General requirements pertaining to the graduate program in pharmaceutical sciences follow the same guidelines for graduate studies at VCU. Additional requirements concerning undergraduate education are imposed upon applicants to graduate specialties in the School of Pharmacy.

Admission to the graduate program in pharmaceutical sciences is open to students

having a doctor of pharmacy degree, bachelor's degree in pharmacy, chemistry, biochemistry, biology, premed, engineering or a related science. Acceptance is based upon undergraduate performance, satisfactory scores on the Graduate Record Examination (GRE), letters of recommendation and where applicable, TOEFL scores. The current requirement for the GRE exam is that all applicants take the General Test containing the Mathematical Reasoning portion.

Application forms and instructions for applying to all graduate programs are available at the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

## Graduate curriculum

### Pharmaceutical Sciences Core

The following courses or course areas are required of all graduate students enrolled in the pharmaceutical sciences graduate program prior to graduation. Courses and course areas that are similar to those listed and have been taken prior to entry in the program may satisfy the requirement and courses other than those listed may be substituted. The appropriate graduate program director and department chair must approve acceptance of courses and course areas that are not on the following list.

1. Introduction to Pharmaceutical Sciences (PCEU/MEDC 607-608)
2. Laboratory safety (MICR 512)  
Pharmacy administration graduate students are not required to take this course
3. Biological sciences (PHTX 400, BIOC/MICR 503-504, MICR 505, PMCH 620)
4. Mathematical sciences (BIOS 543, PHIS 605)
5. Ethics (MICR 510)
6. Seminar (MEDC 690, PCEU 690, PHAR 690)
7. Directed research (MEDC 697, PCEU 697, PHAR 697)

### Specialization in Medicinal Chemistry

Medicinal chemistry, an amalgamation of chemistry and the life sciences, is a multidisciplinary field that applies chemical (i.e., synthetic, analytical, theoretical and/or physical chemistry) principles to investigations of biologically-active substances that include therapeutically useful drugs, natural products, toxins, and drugs of abuse. Investigations may be

focused on identification of biological mechanisms of action, rational drug design and synthesis, metabolism studies, identification of pharmacological tools, or the development of techniques necessary to perform such studies. The discipline requires an understanding of both, the chemical and biological, processes involved; thus, in addition to a solid background in chemistry, the medicinal chemist is required to be versed in biological sciences such as biochemistry, pharmacology, toxicology, molecular biology, enzyme mechanisms, receptor theory and/or neurochemistry, depending upon the student's interests.

In addition to research, the curriculum consists of two general components: core courses and elective courses. All graduate students, doctoral and masters students alike, are required to take core courses that include: Medicinal Chemistry (MEDC 591 and 601), Advanced Medicinal Chemistry (MEDC 610 or 620), Research Techniques (MEDC 526), Seminar (MEDC 690), Biochemistry (BIOC 503 or 504), Pharmacology (PHTX 691), Advanced Organic Chemistry (CHEM 604) and Molecular Modeling (MEDC 641). Specific courses may be recommended on the basis of the result of placement exams administered during the first week of enrollment. Graduate students also are required to present one (master's candidates) or two (doctoral candidates) non-thesis seminar(s) and a final seminar on their research. Depending upon their interests, and in consultation with their chosen dissertation adviser, students select from a variety of elective courses such that their graduate program can be specifically tailored to their future research or career goals. Doctoral students are required to pass a series of cumulative examinations and, upon successfully doing so, become eligible to take an oral comprehensive examination based on an original (i.e., non-thesis) research proposal. Most graduate students begin their research during their first year, and are encouraged to present the results of their research in oral and poster format at various local, state and other scientific meetings. Most advanced graduate students also participate in laboratory and classroom teaching, and some as tutors, to enhance their teaching proficiency and presentation technique. Well prepared students, depending upon the nature of their research, should be able to complete all degree requirements in less than two and a half years for a master's degree or within about four and a half years for a doctoral degree.

Research resources include state-of-the-art molecular modeling facilities, synthetic organic chemistry laboratories, X-ray

crystallographic equipment, and access to high-field nuclear magnetic resonance spectrometers. The department's research interests are closely interwoven with the Institute for Structural Biology and Drug Development, which is housed on the campus and to which many departmental faculty belong.

At present, the research interests of the department include synthesis and biological evaluation of new compounds; molecular-graphics assisted drug design; determination of relationships between chemical structure and biological activity; studies of drug action; receptor binding studies; theoretical studies on structure-activity relationships of drugs, including the use of molecular orbital theory, X-ray crystallography, computational chemistry and molecular connectivity; and, rational design of new drugs and studies on drug metabolism.

### Specialization in Pharmaceutics

Pharmaceutics can be classically defined as the profession concerned with the art and science of formulating medicines into vehicles (tablets, suspensions, aerosols, etc.) that are optimal for the prevention and treatment of disease. This field has become multidisciplinary as more information has been learned about the variety of factors involved. The study of the time course disposition of drugs to a host biologic system has emerged as the discipline of pharmacokinetics and is often studied closely in conjunction with the related discipline pharmacodynamics, which involves study of the time course of drug effects.

Biopharmaceutics involves the study of the means and mechanisms by which drugs enter biological systems. Drug metabolism involves study of the rate and specificity of enzymatic chemical conversion of drugs. The sciences of pharmaceutical and biopharmaceutical analysis involve the investigation of chemical and instrumental systems for qualitative and quantitative measurement of drugs. All of these related disciplines can collectively be referred to as modern pharmaceutics and require a knowledge and interest in mathematics, chemistry, biological sciences and physical sciences.

The curriculum includes core course requirements in statistics, biopharmaceutics, drug metabolism, pharmacokinetics, physical pharmacy, pharmaceutical analysis and seminars in drug development. Depending on the student's interests and major adviser, prerequisites in mathematics, chemistry and pharmacology also may be required. In addition to the core course work, a variety of elective

courses are available including biotechnology, advanced courses in pharmacokinetics and pharmaceutical analysis, chemical separations, physiology, spectroscopy, biochemistry, immunology and many others that may be selected in consultation with the student's major adviser. Doctoral students take written and oral comprehensive examinations after completion of their required course work. The highlight of graduate study is the conduct of the student's research project. This project involves laboratory or clinical research, and completion is indicated by successful defense of the project.

Funding for research includes both federal and industrial sponsorship and provides a number of resources that are similar to industrial standards. A cell culture and microscopy lab, an aerosol research facility, a 72-bed clinic and a biopharmaceutical analysis laboratory are among the many resources available to students. A state-of-the-art computer laboratory is available and a temporary animal housing facility is present in the building. Examples for research equipment available to students include: laser light scattering, laser induced fluorescence, scintillation and gamma counters, atomic spectroscopy, chromatography, brain mapping and differential scanning calorimetry.

### Specialization in Pharmacotherapy and Pharmacy Administration

The Department of Pharmacy has two divisions: the Division of Pharmacy Administration, and the Division of Pharmacotherapy. Upon admission, graduate students will generally choose an emphasis of study in one of these two divisions. The student in Pharmacy Administration will usually elect to emphasize in areas such as pharmacoeconomics, outcomes research and marketing, management and administrative aspects of drug development. Students in pharmacotherapy will usually elect areas such as the clinical aspects of drug development or choose from several areas of pharmacotherapy, such as gerontology, mental health or infectious diseases. Graduate students also may take suitable courses outside the department in areas of basic sciences, mathematics, statistics, economics, business, health administration, computer use, pharmacology and epidemiology. The selection and scope of the external courses will depend on student needs and research interests.

Currently, research interests of the faculty include pharmaceutical marketing,

pharmacy benefits management, pharmaceutical outcomes, pharmacoeconomics, geriatric pharmacokinetics, design and management of pharmacy-related health services systems, drug prescribing and health ethics. In addition, the following pharmacotherapy topics are included: infectious disease, mental health, cardiology, nephrology and dialysis, rheumatology, diabetes, women's health, critical care and geriatrics. Resources include VCU Health System, the Center for Drug Studies, the General Clinical Research Center and many health care centers in the greater Richmond area.

### The combined Pharm.D./M.S. and Pharm.D./Ph.D. programs

In their first two years (P-1 and P-2), the Pharm.D./M.S. or Pharm.D./Ph.D. students will complete the required Pharm.D. curriculum while attending research seminars, and possibly attend graduate courses as electives. After admission into the graduate program, the students will take required graduate courses in lieu of Pharm.D. courses during their P-3 (G-1) year followed by graduate research during the summer. During their G-2 through G-4 years, the students will complete the graduate course requirements and their required Pharm.D. clerkships and work on their graduate research project. Stipends and tuition may be provided for students serving as graduate teaching or research assistants. During that period, the student will follow procedures prescribed to Ph.D. students in Pharmaceutical Sciences.

Students can focus on the following research areas within the School of Pharmacy: pharmacotherapy, pharmacokinetics, biopharmaceutical analysis, pharmaceuticals/physical pharmacy, pharmacy administration and medicinal chemistry. Also, students may focus on the following research areas within the School of Medicine: pharmacology and toxicology. The choice of research area determines the required graduate course work.

The combined Pharm.D./M.S. and Pharm.D./Ph.D. programs in the School of Pharmacy are full-time programs of professional education while offering an opportunity for advanced study in Pharmaceutical Sciences. The programs recognize the need for pharmacy practitioners with excellent research skills in clinical, academic, industrial and regulatory environments. The programs are designed to take advantage of efficiencies in both the Pharm.D. and the M.S. or Ph.D. programs, and allows students in

the combined program to complete the program requirements of both programs after five or six years with both degrees being awarded at the same graduation ceremony.

Students may be admitted into the programs before or during their first two years of enrollment in the Pharm.D. program. Applicants must demonstrate a good academic record, experience in research (e.g., during summer research fellowships with the school's graduate faculty), successful completion of the Graduate Record Examination (GRE); and their application must be sponsored by a graduate faculty.

## Pharm.D./M.B.A. Program

The VCU School of Pharmacy and School of Business offer a dual degree program that allows students in the Pharm.D. program to apply and simultaneously enroll in the M.B.A. degree. The Pharm.D./M.B.A. program is designed to prepare pharmacists for careers that require expertise in both pharmacy and business theories and principles. The program is designed to take advantage of efficiencies in both the Pharm.D. and M.B.A. programs. With careful planning, students enrolled in the dual degree program may complete requirements of both degree programs in five years.

## Curriculum requirements

To earn both degrees, students will complete the following requirements. For the Pharm.D. program, all required Pharm.D. prerequisite and required courses must be taken unless waived by the appropriate representative of the School of Pharmacy. For the M.B.A. program requirements, the foundation courses listed below must be taken. Courses may be waived for students who have taken the equivalent material at the undergraduate level.

ACCT 507 Fundamentals of Accounting  
ECON 500 Concepts in Economics  
FIRE 520 Financial Concepts of Management  
MGMT 524 Statistical Elements of Quantitative Management  
MGMT 540 Management Theory and Practice  
MRBL 530 Fundamentals of the Legal Environment of Business  
MRBL 570 Concepts and Issues in Marketing

The following nine courses of the M.B.A. Advanced Program will be required for each student:

**Lockstep Semester I:** (to be taken at same time)  
INFO 661 Information Systems for Managers  
MGMT 641 Organization Leadership and Project Team Management

**Lockstep Semester II:** (to be taken at same time)  
INFO 664 Emerging Issues in Information Technology  
MGMT 675 Operations Management

### Remaining Advanced Program Courses:

ACCT 608 Managerial Accounting  
ECON 610 Managerial Economics  
FIRE 621 Cases in Financial Management  
MGMT 642 Business Policy  
MRBL 671 Marketing Management

Three M.B.A. elective courses may be taken in the School of Business or by completing approved Pharm.D. electives and/or an applied pharmacy practice experience in pharmacy management, as individually approved by the Director of Graduate Programs in the School of Business.

The key to successful completion of the Pharm.D./M.B.A. dual degree program will be timely and continuing advising from both the appropriate School of Pharmacy adviser and the director of Graduate Programs in the School of Business. For this reason, students are encouraged to seek admission to the dual degree program as early in their Pharm.D. program as possible.

## Admission requirements

Students interested in pursuing the Pharm.D./M.B.A. dual degree program must first obtain admission to the Pharm.D. program. Admitted Pharm.D. students who desire to add the M.B.A. degree to their program must apply to the M.B.A. program using the Application for Graduate Study found at the School of Graduate Studies Web site: <http://www.vcu.edu/graduate>.

A complete application to the M.B.A. program includes:

- Application for Graduate Study and Application Fee.
- Request for In-state Tuition Rates (as applicable).
- Three letters of reference, including a letter of support from the School of Pharmacy.
- Official transcripts from all universities previously attended, including current VCU transcript.
- Current GMAT test score.
- Interview with director of Graduate Programs in School of Business.

## Tuition and financial aid considerations

Upon admission to the M.B.A. program, a Pharm.D. student will be considered a dual degree-seeking student. Students will most often register for a mix of School of Business courses and School of Pharmacy courses each semester of the program. The School of Pharmacy and School of Business have agreed that dual degree seeking students will be considered Pharm.D. students in years P1, P2, P3 and P5. Students will be considered M.B.A. (graduate) students in year P4. When categorized as Pharm.D., a student will be charged tuition and fees from the School of Pharmacy and will be eligible to receive financial aid awards as a Pharm.D. student. When categorized M.B.A. (graduate) a student will be charged the graduate tuition and fee rate of the academic campus and will be eligible to receive financial aid awards as a graduate student.

## Academic regulations

### Registration

While most students register for the first semester beginning in August, arrangements may be made to initiate graduate work at other times during the academic year.

### Financial assistance

Graduate students in the pharmaceutical sciences may receive support via teaching assistantships, research assistantships or fellowships. The American Foundation for Pharmaceutical Education provides support to eligible applicants for graduate study in the pharmaceutical sciences. Students pursuing the master's degree will not be supported by university teaching assistantships.

### The student's adviser and the advisory committee

The departmental graduate program will advise students until a permanent adviser has been chosen. During their first semester, new graduate students are required to arrange interviews with each graduate faculty member of their major department to discuss research projects. The selection of an adviser and a research project are made in accordance with the rules and procedures of the student's department. The adviser will arrange for the appointment of the student's advisory committee. The responsibilities of the adviser and the advisory





### MEDC 541 Survey of Molecular Modeling

#### Methods

Semester course; lecture and laboratory hour. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

### MEDC 591 Special Topics in Medicinal Chemistry

Semester course; 1-3 credits. An elective course in which students may choose to participate in individual or group study in one or more areas of medicinal chemistry. The course can take the form of formal lectures, informal group discussions, literature research, and/or laboratory research. Students must have the permission of the individual instructor before registering for this course.

### MEDC 601 Advanced Medicinal Chemistry I

Semester course; 1 lecture hour. 1 credit. Offered: I. Introduces the general concepts important in medicinal chemistry, including drug dynamics, drug macromolecule interactions, drug design and quantitative structure-activity relationships.

### MEDC 610 Advanced Medicinal Chemistry III

Semester course; 2 lecture hours. 2 credits. Offered: II. Prerequisites: MEDC 601 or the permission of the instructor. Introduces concepts for understanding the medicinal chemistry of the central nervous system.

### MEDC 614/PCEU 614/PHAR 614 Research Techniques

Semester course; variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: Approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail.

### MEDC 620 Advanced Medicinal Chemistry III

Semester course; 2 lecture hours. 2 credits. Offered: II. Prerequisite: MEDC 601 or the permission of the instructor. Reviews the concepts necessary for enzyme inhibitor design. Emphasizes the design of new agents to treat disease states by enzyme inhibition.

### MEDC 630 Theoretical Methods in Drug Design

Semester course; lecture and laboratory hours. 2 credits. Prerequisites: MEDC 601, MEDC 610 or 620, or permission of instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes and physical property correlations. Computational chemistry problems will be emphasized in the laboratory.

### MEDC 642 Nucleoside, Nucleotide, Carbohydrate and Peptide Chemistry

Semester course; 1 lecture hour. 1 credit. Surveys nucleoside, nucleotide, carbohydrate and peptide chemistry with emphasis on their synthesis.

### MEDC 643 Regioselective Drug Metabolism

Semester course; 1 lecture hour. 1 credit. Surveys drug biotransformation reactions. Emphasizes the molecular aspects of Phase I and Phase II drug metabolism.

### MEDC 644 Asymmetric Synthesis

Semester course; 1 lecture hour. 1 credit. Reviews the major asymmetric chemical transformations, including mechanisms, scope and synthetic utility.

### MEDC 645 Introduction to Heterocyclic Chemistry

Semester course; 1 lecture hour. 1 credit. Introduces the chemistry of heterocyclic compounds. Emphasizes heterocyclic nomenclature and the reactions/reactivity of heterocyclic systems.

### MEDC 670 Advanced Molecular Modeling Theory and Practice

Semester course; 3 lecture/laboratory hours. 3 credits. Prerequisite: MEDC 641 or permission of instructor. Examines the principles and application of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

### MEDC 690 Departmental Research Seminar

Semester course; 1 lecture hour. 1 credit. Reports presented by students, staff, and visiting lecturers, current problems and developments in pharmaceutical and medicinal chemistry are discussed.

### MEDC 691 Special Topics in Medicinal Chemistry

Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training.

### MEDC 697 Directed Research in Medicinal Chemistry

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree.

## Department of Pharmaceutics

Blondino, Frank E., Research Associate Professor  
Ph.D. Virginia Commonwealth University

Byron, Peter R., Professor and Chair  
Ph.D. University of Manchester, Manchester England  
Physical chemistry, dosage form design, aerosol and inhalation technology.

Edinboro, Leslie E., Research Assistant Professor  
M.S. West Virginia University

Hindle, Michael, Associate Professor  
Ph.D. University of Bradford, UK  
Aerosols and inhalation technology of novel aerosol delivery devices.

James, John R., Research Associate  
Ph.D. Virginia Commonwealth University  
Behavioral pharmacology of cholinergic drugs.

Karnes, H. Thomas, Professor  
Ph.D. University of Florida  
Drug analysis in biological systems.

Peart, Joanne, Assistant Professor  
Ph.D. University of Bath, UK  
Powder formulations for inhalation, electrostatic characteristics of aerosols and inhalation of drugs of abuse.

Poynor, Wesley J., Associate Professor and School of Pharmacy Director of Information Technology

Ph.D. University of Texas at Austin  
Liver dysfunction pharmacokinetics, pharmacodynamics, application of computer technology to pharmacy practice and data analysis.

Sakagami, Masahiro, Research Assistant Professor  
Ph.D. Virginia Commonwealth University

Sarkar, Mohamadi, Associate Professor and Graduate Program Director  
Ph.D. Virginia Commonwealth University  
Drug metabolism, drug interactions and hormonal carcinogenesis.

Venitz, Jurgen, Associate Professor  
M.D., Ph.D. Universität des Saarlandes, Homburg/Saar, West Germany  
Pharmacokinetics and pharmacodynamics.

Wu-Pong, Susanna, Associate Professor  
Ph.D. University of California, San Francisco  
Drug delivery, transport and targeting, cell biology, biotechnology.

Yanchick, Victor A., Professor and Dean, School of Pharmacy  
Ph.D. Purdue University  
Pharmacokinetics and pharmacodynamics of drugs in the elderly.

### Emeritus faculty

White, C. Eugene, Associate Professor Emeritus  
B.S. 1950 Medical College of Virginia  
J.D. 1962 University of Richmond

## Graduate courses in pharmaceutics (PCEU)

### PCEU 602 Advanced Pharmaceutical Product Development

3 lecture and 4-10 laboratory hours. 5-8 credits. A continuation of PHAR 601.

### PCEU 604 Biotechnology and Pharmacy

Semester course; 1 lecture hour and 1 self-paced DNA isolation and identification lab. 2 credits. The student's basic biochemistry and pharmacy education will be expanded with the newest concepts in molecular medicine, pharmacogenetics, pharmacogenomics, biochemistry, molecular biology, analytical techniques, drug development, delivery and formulation relevant to the use and development of biotechnology-derived products, including protein- and nucleic acid-based pharmaceuticals.

### PCEU 605 Biopharmaceutics and Pharmacokinetics

Semester course; 2-5 lecture hours. 2-5 credits. This course describes the physico-chemical and biopharmaceutical principles, fundamental to the development of pharmaceutical principles, fundamental to the development of pharmaceutical dosage forms including disperse systems, semi-solids, solids and novel drug delivery systems. Formulation, manufacture, control and relevant patient-pharmacist interactions will be addressed.

### PCEU 607-608 Introduction to Pharmaceutical Sciences

Continuous courses; 2 credits offered as 1 credit hour in fall and spring. Students will be introduced to the drug discovery process and learn about drug development from drug design to drug approval. Each topic will be introduced either by a faculty member or an expert

from the pharmaceutical industry. Didactic sessions are followed by guided discussions. Discussion sessions may involve more than one faculty member and utilize specific examples to illustrate the topics.

#### **PCEU 612 Advanced Physical Pharmacy and Biopharmaceutics**

Semester course; 3 credits. Phase equilibria and phase transfer kinetics related to biopharmaceutics will be covered. The relationship between physiochemical properties of a drug dosage form and drug absorption, along with the correlation between in vitro tests used to evaluate dosage forms and in vitro measures of drug absorption will be covered. The course assumes that the student has a basic understanding of pharmacokinetics, physical chemistry and statistics.

#### **PCEU 614/MEDC 614/PHAR 614 Research Techniques**

Semester course; variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: Approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail.

#### **PCEU 622 Clinical Pharmacokinetics**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction. (Nontraditional program)

#### **PCEU 624 Pharmacokinetics**

Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, and digital computers for analysis of linear and nonlinear biologic systems.

#### **PCEU 625 Pharmaceutical Analysis**

Semester course; 1 lecture and 1 laboratory hour. 2 credits. Theory and practice of selected analytical techniques for the quantitative analysis of drugs in body fluids and other matrices. Emphasis is on method validation, and immunoassay methodologies. Laboratory sessions will provide "hands on" experience with modern methods of drug analysis.

#### **PCEU 626 Pharmaceutical Analysis Laboratory**

1 lecture hour. 1 credit. Prerequisite: PHAR 625. A continuation of PHAR 625 with emphasis on providing advanced topics for analysis of drugs and metabolites.

#### **PCEU 690 Pharmaceutics Research Seminar**

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmaceutics. Research Seminar.

#### **PCEU 691 Special Topics in Pharmaceutics**

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the training in research.

#### **PCEU 697 Directed Research in Pharmaceutics**

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

## **Department of Pharmacy**

Barr, William H., Professor

Pharm.D. and Ph.D. University of California, San Francisco.

Brophy, Gretchen T., Assistant Professor

Pharm. D. University of Arizona

Carroll, Norman V., Professor

Ph.D. University of North Carolina, Chapel Hill

Cheang, Kai I., Assistant Professor

Pharm.D. University of Texas

Comstock, Thomas J., Associate Professor

Pharm.D. University of Utah

Crouch, Michael A., Assistant Professor

Pharm.D. Medical College of South Carolina

Delafuente, Jeffrey C., Professor

M.S. 1976 University of Florida

Garnett, William R., Professor

Pharm.D. Philadelphia College of Pharmacy and Science

Hill, Lilian H., Assistant Professor

Ph.D. University of Georgia

Holdford, David A., Associate Professor

Ph.D. University of South Carolina

Kirkwood, Cynthia K., Associate Professor

Pharm.D. Virginia Commonwealth University

Miederhoff, Patrick A., Associate Professor

Pharm.D. University of Kentucky

Ph.D. University of New Orleans

Polk, Ronald E., Professor and Interim Chair

Pharm.D. University of Michigan

Puckett, Brian J., Assistant Professor

Pharm.D. University of Texas

Pyles, Michael A., Assistant Professor

Ph.D. Virginia Commonwealth University

Slattum, Patricia W., Assistant Professor

Pharm.D. Virginia Commonwealth University

Ph.D. Virginia Commonwealth University

Small, Ralph E., Professor

Pharm.D. Duquesne University

Smith, William E., Associate Professor and Associate Dean

Pharm.D. University of California

M.P.H. University of California

Ph.D. Auburn University

## **Graduate courses in pharmacy (PHAR)**

#### **PHAR 504 Pharmacotherapeutics in Physical Therapy**

Semester course; 1 lecture hour. 1 credit. Introduces pharmacotherapeutics for physical therapy students. Emphasizes the safe and appropriate use of drugs in the prevention and treatment of disease. Focuses on the principles and concepts of drug action and therapeutic indications for drugs and drug classes in didactic presentations. Includes the effects of medications on physical functions when appropriate.

#### **PHAR 614/PCEU 614/MEDC 614 Research Techniques**

Semester course; variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time.

Prerequisite: Approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail.

#### **PHAR 626 Advanced Pharmacotherapy Research Methods**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. This course focuses on research techniques used to assess the clinical response to drug therapy, including advantages and disadvantages of different techniques. Published clinical trials are evaluated to illustrate these concepts including statistical assessment. Recent FDA New Drug Applications are reviewed when appropriate to illustrate regulatory aspects of the evaluation of clinical trials.

#### **PHAR 637 Introduction to Research Methods in Pharmaceutical Sciences**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Assists practicing pharmacist managers and researchers in the development, implementation, monitoring and evaluation of programs for the delivery of pharmaceutical care and the practice of pharmacy. Introduces students to the empirical method and to provide them with a fundamental knowledge base for developing salient research questions that could lead to the articulation of testable research hypotheses, accomplished by addressing those research techniques and designs most commonly used in pharmacy and health services research.

#### **PHAR 638 Pharmaceutical Benefit Management**

Semester course; 3 lecture hours. 3 credits. Offered: I. Prerequisite: Permission of instructor. Addresses the need for pharmacy benefit management, the types of organizations that use pharmacy benefit management and the primary tools, techniques and practices used to manage the pharmacy benefit. Presents through lectures, readings, class discussions and a research paper.

#### **PHAR 671 Applied Pharmacoeconomics and Outcomes Research**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Presents theoretical and practical topics relating to pharmacoeconomics and health outcomes research. Students will learn to critically appraise and discuss pharmaceutical outcomes research through lectures, readings, class participation and projects. Requires students to plan, initiate and present an outcomes research project that considers both clinical and economic issues of product or service selection.

#### **PHAR 690 Pharmacy Research Seminar**

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy. Research seminar.

#### **PHAR 691 Special Topics in Pharmacy**

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

#### **PHAR 697 Directed Research in Pharmacy**

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.



# School of Social Work

## Graduate Programs

The School of Social Work was established in 1917 as the Richmond School of Social Economy. Later, renamed the School of Social Work and Public Health, it became the first unit of Richmond Professional Institute. The school developed initially in response to community needs to help World War I veterans with their social and health problems. Subsequent development of the school has expanded activity into all areas of human service. The School of Social Work is one of the oldest of its kind in the South. With the creation of Virginia Commonwealth University in 1968, the School of Social Work became a unit of the university's Academic Campus. The Raleigh Building at 1001 W. Franklin St. houses faculty offices, a student lounge, a classroom and conference rooms.

Richmond provides a unique setting for social work education. The population of the metropolitan area is approximately 800,000 persons. As a community, Richmond is in a period of exciting economic and social growth permitting varied opportunities for community study and field instruction. As the capital of Virginia, Richmond offers educational opportunities in many state government agencies concerned with the development and provision of social services. In addition to its Richmond campus the VCU School of Social Work offers an off-campus program in Northern Virginia. Located in Alexandria, its proximity to Washington, D.C. allows additional opportunities with federal agencies and national organizations. In both locations the school's access to a large number of social agencies permits students to participate in the delivery and development of a wide range of social services.

### Graduate faculty

Abell, Melissa L., Assistant Professor  
Ph.D. University of North Carolina  
Aggressive behavior in children, youth violence, direct practice technologies.

Baskind, Frank R., Professor and Dean  
Ph.D. University of Connecticut  
Leadership in social work education.

Beckett, Joyce O., Professor  
Ph.D. Bryn Mawr College  
Mental health, gerontology, persons of color; family violence.

Bentley, Kia J., Professor and Director, Ph.D. Program  
Ph.D. Florida State University  
Mental health, direct practice, psychopharmacology and social work, women's issues.

Berry-Edwards, Janice, Assistant Professor  
D.S.W. Catholic University of America  
Mental health, relational theory, social work practice in law enforcement.

Biggerstaff, Marilyn A., Professor  
D.S.W. University of Southern California  
Social work credentialing, research methodology, severe mental illness, homelessness.

Bryant, Shirley, Associate Professor and Director, Off-campus Program  
D.S.W. Howard University  
Children and families, African-American women, community organization, social welfare policy.

Corcoran, Jacqueline, Associate Professor  
Ph.D. University of Texas at Austin  
Solution-focused therapy, evidence-based practice, family treatment.

Cramer, Elizabeth P., Associate Professor  
Ph.D. University of South Carolina  
Domestic violence, gay and lesbian issues, group methods.

Dattalo, Patrick, Associate Professor  
Ph.D. Virginia Commonwealth University  
Poverty policy, organizational behavior, social research methods.

Davey, Timothy L., Associate Professor  
Ph.D. Florida State University  
Homeless families with children, multiple family group work, mental health issues.

Dungee-Anderson, Elizabeth A., Associate Professor  
D.S.W. Howard University  
ADHD, clinical case research, multiple personality disorder.

Fabelo, Humberto E., Associate Professor and Director, B.S.W. Program  
Ph.D. Florida International University  
Child sexual abuse, child welfare, refugee resettlement.

Farmer, Rosemary, Associate Professor  
Ph.D. Virginia Commonwealth University  
Schizophrenia/neuropsychiatric impairment and psychosocial adaptation.

Fauri, David P., Professor  
Ph.D. The Maxwell School, Syracuse University  
Bereavement services, social administration and planning.

Green, Robert G., Professor  
Ph.D. Virginia Polytechnic Institute and State University  
Family assessment, research methods.

Harrigan, Marcia, Associate Professor and Director, M.S.W. Program  
Ph.D. Virginia Commonwealth University  
Family measurement, nontraditional family structures.

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**Frank R. Baskind**  
Dean

**Ann Nichols-Casebolt**  
Associate Dean

**Kia J. Bentley**  
Director, Ph.D. Program

**Marcia P. Harrigan**  
Director, M.S.W. Program

**Shirley Bryant**  
Director, Off-campus Program

**Humberto Fabelo**  
Director, B.S.W. Program

**Jaclyn Miller**  
Director, Field Education

**Randi Buerlein**  
Director, Student Services

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Hutchison, Elizabeth D., Associate Professor  
Ph.D. State University of New York at Albany  
Human behavior theory, child welfare.

Koerin, Beverly B., Associate Professor  
Ph.D. University of Virginia  
Administrative issues in higher education and social work education, family and child welfare, women's issues.

Kovacs, Pamela, Associate Professor  
Ph.D. Florida International University  
Hospice and terminally ill patients, HIV/AIDS, volunteerism, health care social work.

Matto, Holly C., Assistant Professor  
Ph.D. University of Maryland  
Child assessment and treatment, measurement, substance abuse, art therapy.

Miller, Jaclyn, Associate Professor and Director, Field Instruction  
Ph.D. University of Texas  
Field instruction, social work education, clinical practice.

Naleppa, Matthias, Associate Professor  
Ph.D. State University of New York at Albany  
Practice evaluation, clinical case management.

Netting, F. Ellen, Professor  
Ph.D. University of Chicago  
Gerontology, nonprofit organizations, case management.

Nichols-Casebolt, Ann, Professor and Associate Dean  
Ph.D. University of Wisconsin-Madison  
Social welfare policy, single-parent families and poverty, women's issues.

O'Connor, Mary Katherine, Professor  
Ph.D. University of Kansas  
Family and child welfare, international social work, constructivist research.

Peay, Robert W., Assistant Professor  
M.S.W. Virginia Commonwealth University  
Field instruction.

Rosenblum, Amy, Assistant Professor and Assistant Director, Field Instruction  
M.S.W. New York School of Social Work, Columbia University  
Field instruction.

Schneider, Robert L., Professor  
D.S.W. Tulane University  
Gerontology, long term care, state social policy advocacy.

Schwartz, Sanford, Associate Professor  
Ph.D. Washington University  
Substance abuse, case management.

Sheridan, Michael, Associate Professor  
Ph.D. Virginia Commonwealth University  
Substance abuse and families, role of spirituality in human behavior and social work practice.

Walsh, Joseph, Associate Professor  
Ph.D. Ohio State University  
Serious mental illness, psychopharmacology, clinical social work.

#### **Emeriti faculty**

Barber, Alice  
Dahlke, H. Otto  
Falck, Hans S.

Beverly, David P.  
Davis, King  
Harris, Grace E.

Jones, Jean B.  
Russell, Dojelo C.  
Schwartz, Martin S.  
Segal, Florence Z.  
Wells, Mabel G.

Roth, Edna F.  
Schrieberg, Charlotte  
Scotch, C. Bernard  
Tropp, Emanuel

## **The profession of social work**

The goals of the profession of social work are to provide services to persons who are vulnerable due to a lack of personal, social and/or institutional resources to meet their emotional, health and economic needs. Social work practice is the application of professional knowledge, skills and values across a range of settings and populations. The focus of social work practice is on individuals, couples, families, groups and communities. In addition to direct clinical social work practice, social workers are involved in the administration of human service programs, social planning, the development of social policies, research and evaluation, and in teaching.

In order to achieve the goals of promoting social justice and enhancing well-being for individuals, families, groups and communities, social workers provide a variety of services primarily in public and nonprofit organizational contexts. Examples of the range of settings in which social workers practice include: community centers, public social services, child welfare, residential treatment facilities, schools, community mental health agencies, family and children's service agencies, psychiatric and acute care hospitals, substance abuse treatment facilities, services for the elderly, court services, and adult and juvenile rehabilitation facilities.

The origins of the social work profession were in the settlement house and charity organization societies' movements of the late 19th century. Professional education for social work practice dates to the early 1900s. The contributions of the profession are evidenced in health and mental health care, the well-being of children and families, the development and implementation of social policies, the planning, delivery and evaluation of human services, and a broad base of research on the human condition. The knowledge base of the profession, and integration of related social, behavioral and biological sciences acquired through professional education facilitates the contributions of social workers in multidisciplinary contexts.

Social work practice is designed to enrich the quality of life by enabling individuals, groups, communities, and organizations to achieve their greatest potential development.

The goal of the School of Social Work at VCU is to provide professional education in response to these needs.

## **Educational programs**

The School of Social Work offers three degree programs. These are an undergraduate curriculum leading to the bachelor of social work degree, a graduate professional curriculum leading to the master of social work degree, and a doctoral program in social work.

## **Baccalaureate Social Work Program**

The four-year program leading to the bachelor of social work degree is accredited by the Commission on Accreditation of the Council on Social Work Education. The objectives of the baccalaureate program are to prepare students for beginning-level professional social work practice and, in the case of students wishing to pursue additional social work education, for graduate study.

A description of the baccalaureate program may be found in the VCU Undergraduate Bulletin. A copy of the bulletin may be obtained by visiting the university's bulletin Web site: <http://www.vcu.edu/bulletins>.

## **Master of Social Work Program**

The school offers a graduate professional curriculum accredited by the Commission on Accreditation of the Council on Social Work Education leading to the master of social work degree. The M.S.W. is offered on the Academic Campus in Richmond and at an off-campus site in Northern Virginia.

The purpose of the M.S.W. Program at VCU is to educate persons for advanced practice in either clinical social work or social work administration, planning and policy practice. The guiding principle in educating students is the promotion of a more just society which includes a commitment to the value of diversity and social work practice in a multicultural society. The VCU School of Social Work emphasizes critical thinking, self-awareness, data-based decision making and ethical integrity.

Graduates of this program will be able to address personal and social problems; formulate, implement, and evaluate policies and programs; engage in knowledge development for the profession; and influence community decision making. The educational program

focuses on service to and empowerment of people who experience oppression or vulnerability due to inadequate or inequitable distribution of personal, social or institutional resources.

Within this context, social work practice is defined as the application of professional knowledge, skills and values across a range of settings and populations for the prevention and amelioration of personal and social problems. The interactions among persons and their environments are the primary targets of social work practice. Services provided by social workers include the restoration, rehabilitation, maintenance and enhancement of optimal functioning of individuals, families, groups, communities and organizations.

Knowledge for social work practice is based on analysis and critical application of qualitative and quantitative research from within the profession and related social, behavioral and biological sciences. Skill in professional practice is based on the differential application of theories and research findings about people in their sociocultural and organizational contexts. Skill is developed by the social worker through the educational process, self-critical practice and the use of supervision and consultation. Values in social work practice are articulated in the profession's code of ethics and reflect the core values of service, social justice, dignity and worth of each individual, importance of human relationships, integrity and competence.

### Admission to the master's degree program

Full-time or structured part-time program applicants are admitted to begin study in the fall semester only. Advanced standing program applicants are admitted for the summer session only. At the time of application, applicants may apply for only one of the following: full time on-campus Richmond, full time off-campus Northern Virginia, part time on-campus Richmond, part time off-campus Northern Virginia, or advanced standing. Application deadlines are Feb. 1 for full-time or part-time programs and Dec. 1 for the Advanced Standing Program. Application forms and instructions for applying to all graduate programs are available on the School of Graduate Studies Web site at <http://www.vcu.edu/graduate>.

### General admission requirements

Within the policies established by the University Graduate Council, the School of Social Work has established the following

minimum criteria for admission to the 60-credit full-time or part-time program:

- a bachelor's degree from an accredited college or university,
- a cumulative GPA of 2.7 on a 4.0 scale for all undergraduate course work and a 3.0 ("B") for the last 60 credits,
- a broad liberal arts background.

Applicants must have completed a minimum of 30 semester credits in the liberal arts. Applicants must have completed at least one course in each of the following four areas:

- **Mathematics/computer sciences:** math, logic, statistics, computer sciences
- **Humanities:** English composition, literature, art history, music appreciation, philosophy, languages, religious studies, multicultural studies
- **Social and behavioral sciences:** psychology, sociology, anthropology, history, political science, economics (with at least three credits in psychology and three credits in sociology)
- **Biology and physical sciences:** anatomy/physiology, botany, general biology, zoology, chemistry, ecology, physics, geology, astronomy (with a minimum of three credits in human biology content).

Applicants who have not completed all the liberal arts prerequisites may be considered for admission but must have completed the prerequisite courses prior to enrollment and must provide official transcripts to document their completion. Courses may be completed at a community college or four-year institution. In addition to the academic requirements, the applicant must demonstrate commitment to social welfare and social justice. This should be reflected in (1) the personal statement and (2) the applicant's academic background, social work employment, internships and volunteer work in community agencies serving vulnerable and/or oppressed populations.

### General admission procedures

Applications will be reviewed when they are complete. This includes the application form, three letters of reference (such as from faculty, employers, colleagues who know the applicant's academic and work/volunteer abilities), official transcripts from all undergraduate and graduate colleges and universities attended, a personal statement, the sup-

plemental Academic Information form, and an employment resume. The applicant is responsible for ensuring that all materials are submitted prior to the application deadline. Applicants are encouraged to submit their materials well before the deadline.

Some early decisions will be made on very strong applications; the majority of decisions will be made after the application deadline when the entire applicant pool can be considered. The admission review process includes faculty, practitioner, and administrative review of the applications. Reviewers consider scholarship ability, academic background, writing skills, work and volunteer experience, and personal qualities that indicate potential to meet the requirements of the social work profession. The school is particularly committed to ensuring a student population that reflects the multicultural and diverse nature of the American society.

### Advanced Standing Program

The Advanced Standing Program leads to a master of social work degree upon completion of 39 credit hours. The program begins in early June, continues through the summer, and culminates with graduation the following May. The Advanced Standing Program is a full-time program only and cannot be pursued on a part-time basis.

Admission to the Advanced Standing Program is available to a select group of students with a bachelor's degree from an undergraduate social work program (B.S.W.), accredited by the Commission on Accreditation of the Council on Social Work Education, completed no more than five years prior to the date of application to the M.S.W. Program.

The minimum requirement for admission to the Advanced Standing Program is a 3.2 GPA on a 4.0 scale for the last 60 semester hours of academic work and a 3.0 cumulative GPA. Exceptions may be made to the GPA requirements for applicants with exceptional circumstances.

As part of the application packet, applicants must submit their field practicum evaluation(s) and a reference letter from the field practicum faculty. Applicants who meet these criteria will be scheduled for a structured on-campus interview, which includes a written case assessment. Admission decisions will be based on application materials and faculty/administrative evaluation of applicant performance on the structured interview and written case assessment.

## Transfer admits

Applicants transferring from other CSWE-accredited M.S.W. programs must submit course syllabi, field practicum evaluations and a Statement of Good Standing from the dean or director of the program from which the student is transferring. These materials must be submitted in addition to the required application form, transcripts, personal statement, resume and reference letters. No more than 30 semester credits will be accepted in transfer, and transfer credit will be awarded in accordance with university policies governing transfer credit and time limits for degree completion.

Applicants from non-social work graduate programs must submit course syllabi for transfer evaluation. A maximum of six semester credits of elective course work may be accepted in transfer from non-social work graduate programs in accordance with university policies governing transfer credit and time limits for degree completion. No course credit is given for life or work experience.

## Course waiver information for new M.S.W. students

Students may request to be waived from courses in the M.S.W. program if they can demonstrate they have satisfactorily completed the equivalent courses. Students must present evidence of content equivalency to the M.S.W. program director and have earned an "A" or "B" grade in the courses that are the basis for the waiver request; these courses must have been completed within the last five years. A portfolio process is used to assess equivalency.

Graduate students from non-M.S.W. programs, from B.S.W. programs but not in the Advanced Standing Program, and from B.A., B.S. or other undergraduate programs may be waived from no more than three foundation courses:

SLWK 609 Foundations of Research in Social Work Practice

SLWK 601 and 609 Human Behavior in the Social Environment I and II

The course waiver does not result in award of credit. Credit may be awarded only through transfer of graduate courses (see Transfer Policy). Students who are granted waivers but not transfer credits must take elective courses to fulfill the number of credits that have been waived.

Students interested in pursuing a waiver for one or more of the specified foundation courses should contact the M.S.W. Program

Office to request the Equivalency Portfolio Form(s) and instructions. Additional information concerning course waivers is available online: <http://www.vcu.edu/slwweb/admissions/msw.html>.

## Special admits

Special admission may be granted to applicants whose GPA does not meet the minimum requirements, but who have strong practice-related experience and other exceptional qualifications. Although the GRE is not required, applicants may submit GRE scores or transcripts reflecting graduate course work completed to provide information on their capability for graduate study. Applicants admitted as provisional students (with GPAs below 2.7) must complete the first 12 credits in the program with a GPA of 3.0 or better and meet with their adviser at least three times during their first semester in the program.

## Master of social work degree requirements

The regular standing M.S.W. degree requires the completion of 60 credits of graduate study (two years of full-time study). The first 30 credits may be taken in one academic year on a full-time basis or may be extended to a maximum of two years in the structured part-time program in Richmond and Northern Virginia. Students select an area of concentration for the last 30 credits, which can be completed in one academic year on a full-time basis or extended to a maximum of two years in the structured part-time program. Students are usually in a field instruction practicum two days each week during the foundation curriculum and three days each week during the concentration curriculum. Students must complete all required course work for the M.S.W. degree; however, modifications to the structure of the curriculum can be made for students with special learning needs.

Course credit for work or life experience is not granted in lieu of M.S.W. course credits.

## M.S.W. curriculum

The purpose of the Master of Social Work Program is to prepare graduate-level social workers with mastery of the knowledge, values and skills essential for advanced social work practice in a multicultural society. The school accomplishes

this purpose through its full- and part-time programs of study for the M.S.W. degree in its on- and off-campus locations. The objectives of the M.S.W. Program are to:

- provide a foundation curriculum of the knowledge, skills, ethics and values essential for work with individuals, families, groups, communities and organizations,
- provide a concentration curriculum preparing students for advanced practice in either clinical social work practice or social work administration, planning and policy practice in a range of settings,
- promote students' adherence to and application of the profession's values and ethical principles,
- promote students' understanding of the implications of diversity by educating them to identify cultural strengths and counteract individual and institutional prejudice, oppression and discrimination,
- enable students to use research methods to analyze and critically evaluate professional practice, programs and service delivery systems,
- promote students' understanding of advocacy and involvement in advocacy to effect social and economic justice, and
- provide a learning environment that instills in students a commitment to continued learning and self-critical practice.

## The foundation

The foundation curriculum comprises the first 30 credits of the M.S.W. program. The purpose of the foundation practice, in laying the groundwork for concentration study, is to develop the knowledge and skill base necessary to apply and carry out core competencies (relationship building, problem identification, assessment, selecting and planning interventions, implementation and evaluation) with individuals, families, groups, communities and organizations. Foundation practice emphasizes critical thinking, client strengths, commitment to social work values and ethical principles, self-awareness, professional development, evidence-based decision making, multicultural competency, and social and economic justice. The foundation curriculum includes courses in social work practice, human behavior, social policy, social justice, research and field instruction.



## Concentration options

After completion of the foundation year of study, M.S.W. students choose an advanced concentration in either clinical social work practice or social work administration, planning and policy practice. The concentration curriculum prepares graduates for active roles in practice and program evaluation and in the generation of knowledge for future practice, programs and policy.

Both concentration options are available in Richmond and at the Northern Virginia off-campus site.

## Clinical social work practice concentration

Clinical social work practice involves a mutual problem solving process in which multidimensional assessment, goal setting, planned intervention and evaluation are prominent components, all of which are informed by current scientific knowledge. All clinical practice is grounded in the values and purposes of the social work profession. The goal of clinical social work is to promote effective coping with life challenges and transitions. This is achieved by helping people solve problems, change dysfunctional behavior, resolve emotional and interpersonal conflicts, develop and use social networks and resources and maintain achieved capacities and strengths. This goal rests on the fundamental belief in the dignity of all human beings and in communal responsibility for all members of the multicultural society.

Clinical social work practice takes place in the context of a purposeful relationship. The conscious use of the professional self is central in building and maintaining such relationships. Interventions may involve therapeutic, supportive, educational and resource management activities. These interventions are based on a process of strengthening and reordering of organizational structures in the lives of clients: intrapersonal (including intrapsychic), interpersonal, institutional and/or social.

## Social work administration, planning and policy practice concentration

The social work administration, planning and policy practice concentration prepares graduates to become leaders skilled in analyzing, formulating, implementing and evaluating policies, plans and programs. The knowledge, values and skills that are taught

emphasize current theory and research through classroom and field-based experiences. Practice takes place in the context of a complex, changing environment in which communities and governmental, legislative, nonprofit and for-profit organizations advocate for, plan, and deliver social services and advocate for social change. The major themes within the integrated curriculum are social and economic justice, diversity, leadership and advocacy.

## Field instruction

Field instruction courses are an integral part of the curriculum of the School of Social Work. Academic credit is awarded for field instruction hours completed in a community agency under professional supervision. In the first field placement, students are expected to demonstrate in practice the professional knowledge, values and skills studied in the total foundation curriculum.

In the concentration component of the curriculum, students are placed in agencies according to their chosen concentration (clinical social work practice or social work planning and administrative practice) and their career interests. Examples of such agencies are: public social services, community mental health centers, hospitals, substance abuse treatment programs, schools, family and children's services, and correctional facilities.

Part-time students planning to take either foundation or concentration field instruction (two semester or block option) must request placement in writing one full semester prior to the semester or summer in which they plan to begin field instruction. Such requests are to be addressed to the director of field instruction. Only one placement (foundation or concentration) may be taken in a block and the block placement option is typically only for students in the structured part-time program. Exceptions are sometimes granted for students with special learning needs.

Field instruction placements are generally available throughout Virginia, Washington, D.C. and in some neighboring states. Students residing in a community outside of Richmond may request field placement in their home community. Granting of the request depends on availability of appropriate resources. Students are, however, placed in agencies for field instruction primarily on the basis of curriculum requirements. Therefore, a number of students usually are placed in agencies a

distance from Richmond (or their residence). Access to a car is essential and arrangements for travel must be made by students at their own expense.

Students may propose to complete one of their two field placements in their social work agency of employment. The proposal form may be obtained from the Field Department Office and the plan must meet the school's educational requirements. This option is not available to Advanced Standing Program students who complete only one field placement during their three semesters in the program.

Credit for work or life experience is not granted in lieu of field instruction course credits.

## Structured part-time study for the master of social work degree

The school offers a structured part-time program leading to the M.S.W. degree on the Richmond campus and at its off-campus site in Northern Virginia. Students applying for the structured part-time program must: meet the same criteria for admission as full-time students; be admitted to the university prior to enrolling in any courses in the structured part-time program; and begin the program in the fall semester only. Students in the structured part-time program also must complete six credits each fall and spring semester and are expected to complete all requirements for the degree within a four-year period, making full-time work very difficult. The structured part-time program cannot be completed entirely in night or weekend study, given field practicum requirements and the scheduling of some courses. With the exception of the field practicum, foundation courses required in the structured part-time program are available in the evening classes (4 and 7 p.m. classes). Students may take the concentration curriculum (last 30 credits) on a structured part-time or full-time basis at the Northern Virginia off-campus site or on campus in Richmond.

## Curriculum exceptions

Students must complete all required course work for the M.S.W. degree, however, modifications to the structure of the curriculum may be requested by students with special learning needs. VCU has an Office of Services for Students with Disabilities. They work with students to determine academic adjustments that may be needed. They can be reached by calling

(804) 828-2253 (VTDD). Students with disabilities may also call the director of student services in the School of Social Work, (804) 828-0703, to discuss their particular learning needs. The director of student services in the School of Social Work works with these students to determine potential curriculum options. There also is a Students with Disabilities organization in the School of Social Work that provides support and engages in advocacy activities on behalf of students with disabilities.

### **Special M.S.W. options**

Study in the M.S.W. Program combined with study in other programs or subjects can lead to students earning special certificates or additional degrees. Options are offered for a certificate in aging, for school social work certification, for a certificate in interdisciplinary early childhood intervention, for nonprofit management certificate, for dual degree study in law, and for dual degree study in divinity or Christian education. Dual degree options are available only in Richmond.

### **M.S.W. and Certificate in Aging Studies**

The School of Social Work in cooperation with the Department of Gerontology of the School of Allied Health Professions of VCU provides students with a unique educational opportunity in social work and gerontology. School of Social Work M.S.W. students interested in work with the elderly or in gerontological programs may earn a Certificate in Aging Studies while completing the master of social work degree requirements.

Students must meet the admission requirements of the M.S.W. Program of the School of Social Work and of the Certificate in Aging Studies of the Department of Gerontology in the School of Allied Health. Admission into one program does not guarantee admission into the other. In order to meet the requirements of the M.S.W. degree and the Certificate in Aging Studies, students complete a total of 65 graduate credits. Students complete all foundation and concentration courses of the M.S.W. Program, and core courses (nine credits) of the Certificate in Aging Studies. Other requirements are met by (1) completion of M.S.W. research courses with students undertaking a research project focused on aging, (2) completion of concentration field instruction practicum requirements (six credits) in a

social work setting related to aging, and (3) completion of an independent study course in gerontology which integrates research and practicum courses.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: M.S.W.-Gerontology Certificate Adviser.

### **M.S.W. and Certificate in School Social Work**

Through a collaborative program with the VCU School of Education, students may meet Virginia Department of Education standards for certification as school social workers in Virginia in addition to meeting requirements for the M.S.W. degree. Students interested in certification in school social work should contact their adviser during the first semester of their program. In order to meet the requirements of the M.S.W. degree and the School Social Work certification option, students complete a total of 63 graduate credits including six credit hours of approved graduate courses in education.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: Certificate for School Social Work Adviser.

### **M.S.W. and Certificate in Interdisciplinary Early Childhood Intervention**

This is a 10- to 13-credit competency-based certificate that is offered by the Virginia Institute for Developmental Disabilities and the schools of Allied Health, Education, Nursing, Social Work and the Department of Psychology. Built on a strong base of advanced professional course and clinical work, students will be prepared to intervene with families and their infants from zero to five years of age who are at risk or have been identified with developmental delays.

In this certificate program M.S.W. students complete 63 credit hours of course work including specialized courses in interdisciplinary work and directed study seminars. The certificate requires that students complete a clinical concentration practicum placement in an approved infant/early childhood field site. The course offerings and practicum are taken during concentration study in the master's pro-

gram. Interdisciplinary seminars provide opportunities for students to work with care providers in the helping disciplines to promote communication, coordination, advocacy and referral activities.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: Early Childhood Intervention Certificate Adviser.

### **M.S.W. and Certificate in Nonprofit Management in Cooperation with VCU Department of Public Administration**

Through a cooperative arrangement with the VCU Department of Public Administration, M.S.W. students pursuing the Social Work Administration, Planning and Policy Practice (SWAPPP) concentration may simultaneously earn the graduate certificate offered by the Public Administration Program of the Department of Political Science and Public Administration.

### **Certificate Requirements for M.S.W. students**

Social work SWAPPP Concentration students are required to complete three nonprofit courses: PADM 656 Fund Development for the Nonprofit Sector (Fall course); PADM 659 Financial Management for Nonprofit Organizations (Spring course); and PADM 661 Nonprofit Law, Governance and Ethics (Summer course) in the Department of Political Science and Public Administration.

Two social work SWAPPP courses are substituted for six credit hours of the certificate's 15 credit hour requirement. One of these courses is SLWK 712 Social Work Planning and Administration I. The second course can be SLWK 711 Strategies for Social Work Planning and Administration Practice or SLWK 713 Social Work Planning and Administrative Practice II.

M.S.W. Clinical Concentration students must complete 15 course credits in nonprofit management. Six of the PADM nonprofit credits will satisfy the M.S.W. elective requirement for either concentration.

### **Application Process**

To earn the Certificate in Nonprofit Management simultaneously with the M.S.W., it is necessary to complete a graduate school application for the certificate program; however, no supporting informa-

tion or fees are required for students who are already enrolled in good standing in the social work master's degree program.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: Certificate in Nonprofit Management Adviser. Detailed information about the Certificate in Nonprofit Management can be obtained from Dr. Janet Hutchinson, Associate Professor and Director of the Master of Public Administration Program, (804) 828-8041 or e-mail: [jhutch@vcu.edu](mailto:jhutch@vcu.edu).

### **M.S.W. and Certificate in Nonprofit Management in cooperation with George Mason University**

The School of Social Work in cooperation with the George Mason University's Nonprofit Management Program located in Arlington, Va. provides students in the M.S.W. planning and administration concentration with a unique educational opportunity to obtain a Certificate in Nonprofit Management while completing the VCU master of social work degree requirements.

Eligible M.S.W. students must have completed a minimum of 12 M.S.W. credits with a GPA of 3.3 or higher. Qualifying M.S.W. students are provided expedited admission to the certificate program after they complete a GMU application for Graduate Study, submit the application fee, supply an official VCU transcript and send the completed application to the GMU Graduate Admissions Processing Center for the College of Arts and Sciences.

In order to meet the requirements of both programs, students complete a total of 66 graduate credits that include all VCU M.S.W. foundation and required social work administration, planning and policy practice courses. The M.S.W. elective requirement is satisfied by two of the four required GMU certificate courses.

Additional information may be obtained from the Director, NOVA M.S.W. Program, VCU School of Social Work, George Mason Professional Center, 3401 N. Fairfax Drive, Third Floor, Arlington, VA 22201.

### **M.S.W. and J.D.: Dual degree study in law and social work**

Through a cooperative arrangement with the T. C. Williams Law School, selected students in either school may pursue a combined four-year curriculum of graduate

study leading to the degrees of master of social work and juris doctor. The program is established in recognition of the role of public law in social and economic life. The dual degree program prepares professionals versed in the values, knowledge, and skills of both fields, bringing an integrated base of competency to the resolution of human and social problems.

Applicants must successfully meet the admission requirements of both schools and upon admission, are assigned an adviser in each school. Students in dual degree study may begin the course work in either school, with the sequence of courses being determined by the point of entry.

The time normally required for completion of the integrated four-year curriculum is one academic year less than if each degree were taken separately. Elective courses will enable students to select areas in law and in social work which meet their particular interests. Application for admission must be made to each institution separately. Those interested should write both the Admissions Office of the T. C. Williams Law School, University of Richmond, VA 23173 and the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23298-0568.

### **M.S.W. and M.Div. dual degree study**

This four-year professional degree program is offered by Virginia Commonwealth University in cooperation with Richmond Theological Consortium schools that include Union-Presbyterian School of Christian Education, Baptist Theological Seminary at Richmond, and Samuel DeWitt Proctor School of Theology at Virginia Union University. The purpose of the dual degree program is to prepare students for service in occupations where social work and the church's ministries intersect; to enable social workers to perform and evaluate social work practices as they relate to biblical, theological, ethical, educational and pastoral perspectives; and equip graduates for various forms of ministry in which clinical and administrative skills in social work are critical.

This program requires four continuous years of study and leads to a master of social work degree conferred by VCU and a master of divinity degree conferred by Union-PSCE, BTSR or STVU. Permission for part-time study must be given by the dual degree adviser at VCU and the appropriate theological school dean of faculty. All degree requirements must be completed

within seven years of matriculation. Students can apply simultaneously to both programs and begin study at either institution following the approved curriculum plan; or, a student may begin at either VCU or the seminary and then apply for admission to the other school during the first year of study in accordance with application deadline dates.

The M.S.W. requires 60 credits that include the required integrating seminar and one course transferred from the seminary to satisfy a three-credit M.S.W. elective requirement. The integrative seminar is taken in the final year of study and is co-taught by a member of the VCU School of Social Work faculty and a member of a faculty of an RTC school. The seminar enables the student to integrate theoretical, social justice, empirical, ethical and practical dimensions of social work with the biblical, theological, educational and pastoral perspectives.

Prospective students apply to the VCU School of Social Work and one of the participating theological schools, must meet both sets of admission standards, and be accepted into both programs. For the M.S.W. program, refer to the "Admission to the master's degree program" chapter in this section. For information about admission to an RTC master of divinity program, contact one of the following schools:

Baptist Theological Seminary at Richmond  
3400 Brook Road  
Richmond, VA 23286-3446  
Telephone: (804) 345-BTSR (2877)

Samuel DeWitt Proctor School of Theology  
1500 N. Lombardy St.  
Richmond, VA 23220  
Telephone: (804) 257-5715

Union Theological Seminary and Presbyterian School of Christian Education  
3401 Brook Road  
Richmond, VA 23227  
Telephone: (804) 278-4230  
Toll free: (800) 229-2990

For information about the M.S.W./M.Div. program, contact the M.S.W. Program Director, 1001 W. Franklin St., Richmond, VA 23284-2027; (804) 828-1041. M.S.W. program applications can be obtained from the VCU School of Graduate Studies Web site at <http://www.vcu.edu/graduate/ps/admission.html>.

## M.S.W. and M.A. in Christian Education: Cooperative program with Union Theological Seminary and the Presbyterian School of Christian Education (Union-PSCE)

This program has been developed to prepare social workers for service in church related institutions (children's homes, nursing homes, etc.), for planning and working in inner city settings, and for other ministries. Counseling, group work, and educational skills are components of both programs.

This program requires three continuous years of study and leads to a master of arts degree conferred by the Union Theological Seminary and Presbyterian School of Christian Education, and a master of social work degree from VCU. Typically, a student completes the first year at Union-PSCE, followed by two years at the VCU School of Social Work. In the final semester at VCU, students complete an integrative seminar at Union-PSCE. Both degrees are awarded at the end of the three years of study.

Application for admission must be made to each institution separately. Those interested should write both the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051, and Director of Admissions, Union-PSCE, 1205 Palmyra Ave., Richmond, VA 23227.

### Academic status

A minimum GPA of 3.0 ("B") on a 4.0 scale over the entire period of study, a minimum of 60 credits in the two-year and part-time options, or 39 credits in the Advanced Standing Program, demonstrated ability in social work practice, and acceptable professional behavior are required for graduation with a master of social work degree.

Students must achieve a GPA of 3.0 or higher in the required foundation courses, exclusive of field instruction practicum, in order to continue into concentration study.

A student whose cumulative GPA is less than 3.0 at any point in the program or after completion of the first 12 credits will be dropped from the program.

A student who receives any grade of "D" or "F" will be dropped automatically from the program without regard to GPA.

A student who earns a grade of "C" or below in more than six credits, exclusive of field instruction, will be dropped automatically and immediately from the program without regard to GPA.

Field practicum performance is graded on a pass/fail basis. The student must

receive a grade of pass to continue in the program. The student who receives a grade of fail in the field practicum is dropped automatically and immediately from the program without regard to GPA.

A student who is dropped from the master of social work program may petition the dean of the School of Social Work in writing for readmission to the program after a minimum absence of two semesters; readmission is not guaranteed. A student may be readmitted only once.

### M.S.W course requirements

All students complete the same course requirements for the foundation curriculum prior to entering concentration courses. Concentration study varies according to the student's choice of method.

#### Two-year program

##### Foundation

First year, fall semester	credits
SLWK 601 Human Behavior in the Social Environment I	3
SLWK 602 Social Welfare Policy, Community Planning and Organizational Practice I	3
SLWK 603 Social Work and Social Justice	3
SLWK 604 Social Work Practice with Individuals, Families and Groups I	3
SLWK 693 Foundation Field Instruction I	3
	15

##### First year, spring semester

SLWK 605 Social Work Practice with Individuals, Families and Groups II	3
SLWK 606 Social Welfare Policy, Community Planning and Organizational Practice II	3
SLWK 609 Foundations of Research in Social Work Practice	3
SLWK 610 Human Behavior in the Social Environment II	3
SLWK 694 Foundation Field Instruction II	3
	15

##### Clinical concentration

###### Second year, fall semester

SLWK 703 Emotional, Mental and Behavioral Disorders	3
SLWK 704 Clinical Social Work Practice I	3
SLWK 706 Research for Clinical Social Work Practice I	3
SLWK 793 Concentration Field Instruction	3
Elective	3
	15

###### Second year, spring semester

SLWK 705 Clinical Social Work Practice II	3
SLWK 707 Research for Clinical Social Work Practice II	3

SLWK 710 Concentration Social Policy	3
SLWK 794 Concentration Field Instruction	3
Elective	3
	15

### Planning and administrative concentration Second year, fall semester

SLWK 711 Strategies for Social Work Planning and Administrative Practice	3
SLWK 712 Social Work Planning and Administrative Practice I	3
SLWK 714 Research for Social Work Planning and Administrative Practice I	3
SLWK 793 Concentration Field Instruction	3
Elective	3
	15

### Second year, spring semester

SLWK 710 Concentration Social Policy	3
SLWK 713 Social Work Planning and Administrative Practice II	3
SLWK 715 Research for Social Work Planning and Administrative Practice II	3
SLWK 794 Concentration Field Instruction	3
Elective	3
	15

Information on the required sequencing of courses for the Structured Part-time Program is available upon request.

## Ph.D. Program in Social Work

### Conceptual framework and mission

VCU's Ph.D. in Social Work Program is a research-oriented educational enterprise with a mission to develop scholars and leaders for education and practice in human services. Its vision is a program that builds and nurtures students' intellectual curiosity, creativity and courage, as well as their desire to "make a difference." The program is built around excellence in teaching, mentorship and socialization of students, as well as collaborative involvement in the program by its diverse faculty. Graduates of the program become active in teaching, consultation, research, practice and program evaluation, staff and program development, policy analysis, and advocacy. They are employed in universities and colleges, and in human service organizations and agencies at the local, state, national and international levels. In all the program's activities and events, emphasis is placed on the following areas:

- The development of an intellectual community that values critical and creative thinking.

- The connections among the philosophy of science, theory, research and practice.
- The analysis and integration of knowledge and values, especially their relevance to diverse populations and issues of social justice.

## Educational objectives

The program's specific educational objectives are achieved and demonstrated by the students through a number of formal and informal mechanisms: required and elective course work, independent study and directed research, a comprehensive exam process, and the dissertation process. The objectives are as follow:

- A critical understanding of multiple paradigms in the philosophy of science and the implications of these for contemporary research.
- Mastery of a range of research methodologies and data analysis strategies, and competence in conducting independent inquiry on issues of importance to the field.
- Competence in the analysis and application of a wide range of social, behavioral and practice theories.
- An ability to design and propose theoretically and empirically grounded models of social work intervention for coping with personal transitions and challenges, addressing social problems, and promoting equity and social justice.
- A critical understanding of the historical place of social work and social welfare in the evolution of social thought and cultural values.
- Expertise in a chosen substantive area related to social work, including skills related to dissemination of this knowledge.

## Admission to the Ph.D. program

Applicants to the program must have an earned master's degree in social work or a closely related discipline and professional or practice-related experience relevant to their career goals. It is highly recommended that applicants have an M.S.W. and post-master's social work policy or clinical practice experience. The application process includes submission of a completed application form, transcripts for all undergraduate and graduate studies, three references, recent Graduate Record Examination scores, a recent sample of written work, and a personal statement describing the applicant's motivation for par-

ticipation in the program and outlining the relevancy of the applicant's professional experience to her/his career objectives.

Potential applicants interested in testing their capacity for doctoral work or those whose application materials have not been completed for admissions review may request to take a class as a nondegree-seeking student. Three credit hours in an approved course taken on this basis may be applied toward the degree. Satisfactory performance as a nondegree-seeking student does not assure admission as a regular degree-seeking student. While it is possible to combine a limited amount of course work with outside employment, participants are expected to commit themselves to one year of full-time study prior to beginning dissertation work.

For application materials, write to: Doctoral Program Director, School of Social Work, P.O. Box 842027, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027.

## Requirements for the Ph.D. degree

A minimum of 38 credit hours of course work beyond the master's degree plus a minimum of 16 credit hours of dissertation research is required. The course work includes 23 credit hours of content common for all students, and 15 credit hours of concentration content in a substantive area. The School of Graduate Studies requirements for candidacy exams and dissertation committees apply to students in this program. Up to six credit hours may be granted for courses completed at another university. Full-time students ordinarily complete 18-20 credit hours per academic year. Other requirements are detailed below.

### Common curriculum

Curriculum that is required of all students consists of the following courses (23 credits):

- SWKD 701 Quantitative Research Methods and Analysis I
- SWKD 702 Quantitative Research Methods and Analysis II
- SWKD 703 Philosophical Issues in Social Work Knowledge Building
- SWKD 704 Multiparadigmatic Qualitative Methods and Analysis
- SWKD 708 Social and Behavioral Science Foundations for Social Work
- SWKD 710 Social Work, Social Welfare and Social Thought
- SWKD 715 Development and Evaluation of Social Work Practice Theories and Models

Note: Many courses in the common curriculum are completed prior to moving onto more specialized concentration course work.

**Concentration curriculum.** The concentration curriculum allows students to specialize in a substantive area and increase their relevant research skills. This concentration consists of at least 15 hours of course work, including advanced statistics and research courses, and a directed research course designed to assist students in preparing for their dissertation research project. In addition to courses offered by the program, students are expected to enroll in appropriate courses in other schools and departments of the university with approval of their adviser.

**Comprehensive exam/admission to candidacy.** Upon completion of all required course work, participants will take a comprehensive exam under the supervision of a Comprehensive Examination Committee. Through the comprehensive examination, students must demonstrate the ability to integrate the whole of their educational experience by adequately addressing complex questions pertinent to the current and developing knowledge base of the human service field. Successful completion of the comprehensive exam results in candidacy status for the Ph.D. degree.

**Dissertation.** After admission to candidacy, students proceed to propose, complete and defend their dissertation. This is done under the supervision of a dissertation committee. Students are required to maintain continuous enrollment of at least three credit hours per semester (excluding summer) until they have attained 12 hours of dissertation credit, after which they may enroll for as few as one credit per semester. The dissertation must represent independent research and should be based on an original question or hypothesis relevant to social work. Successful defense of the dissertation completes the requirements for the degree.

## Financial assistance for M.S.W. and Ph.D. students

Although financial assistance is limited, some funds are available. No prospective student should refrain from seeking admission to the school for financial reasons alone.

**Federally guaranteed loans and work-study program.** See Student Financial Assistance in the Graduate Studies at VCU chapter of this bulletin.

**Research and teaching assistantships for doctoral students.** Research and teaching assistantships may be available to doctoral students. Additional information is available from the director of the Ph.D. program.

**School based awards/endowed scholarships.** School of Social Work awards are available to continuing students in the form of school based tuition assistance and endowed scholarships. Tuition assistance awards are generally made in the summer to be awarded during the Fall and Spring semesters. Scholarship resources and award amounts are very limited. Scholarships are awarded on the basis of the candidate's academic performance, financial status, and/or qualifications for professional study in a particular practice area. Special M.S.W. scholarships and stipends are available for minority students and students seeking to specialize in the areas of health, mental health and child welfare. Since funds available through the School of Social Work are limited, applicants are strongly urged to seek additional sources to finance their education. A complete listing of tuition assistance and scholarships is available on the school's Web page: <http://www.vcu.edu/slwweb/scholarship.htm>.

**Traineeships.** States, through their departments of social services, mental health, corrections and rehabilitation, may have programs to assist individuals in securing professional education. These may be consulted locally. The school at times administers and awards federal and university traineeships for qualified M.S.W. students.

**H. H. Hibbs Loan Fund.** The H. H. Hibbs Loan Fund was established by the School of Social Work Alumni Association for short-term emergency needs. Alumni, faculty and friends of the school are encouraged to contribute to it. Enrolled students who wish to apply for a loan should discuss this with their faculty adviser and the associate dean.

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## **Continuing education**

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Post-degree study is a vital part of professional work education. The School of Social Work offers a variety of lectures, institutes and workshops as part of the school's commitment to enhance social work practice and broaden educational experiences for students, social workers, field instructors and others in social service delivery systems.

State, regional and local agencies and institutions frequently identify educational and training needs in content or skill areas for

selected staff members. The school, through contractual arrangements, contributes expertise in designing and implementing short-term training courses and materials.

Offerings are planned throughout the year. For further information about specific continuing education courses, inquiry should be addressed to the Director of Continuing Education, School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027.

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## **Alumni Association**

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The School of Social Work Alumni Association actively supports the school, its students and faculty. The association sponsors different activities during the year, including a job-seeking skills workshop, a reception for graduating students and their families, and a welcome reception for new students at orientation. The association also cosponsors several workshops annually, offering continuing education opportunities for alumni which are often open to students as well. All graduates of the School of Social Work are members of the alumni association. The association falls under the umbrella of the VCU Alumni Association.

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## **M.S.W. Student Association**

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The Master of Social Work Student Association is the organization of M.S.W. students enrolled in the school. Established for the purposes of facilitating communication among students and between the student body and the school, the association provides a means by which student concerns and ideas can be formulated and acted upon. It also enables students to conduct a variety of social, civic and educational activities throughout the year.

This organization plays a vital role in the educational process. Student contributions to the governance and curriculum of the school are of value to both the institution and the students. Participation in the decision-making process is accomplished through student representation on committees. Faculty and students work closely together throughout the year to meet the needs of graduate social work education. Students participate as full members of committees within the school.

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## **Black Student Association**

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The Black Student Association was established to create and maintain an atmosphere of unity and support among black students in the School of Social Work. It serves to assist students in their personal and professional growth and development. Membership in this organization helps students to develop a keen awareness of the acute needs of the black community and the active role that must be assumed by the dedicated black professional social worker in promoting the general welfare of black citizens. To attain these goals, the organization utilizes the educational process and related experiences of students at the school and in fieldwork. Students are encouraged to participate in all phases of the academic environment. Black students are expected to maintain membership in and are members of the M.S.W. Student Association of the school.

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## **International Student Association (Northern Virginia Campus)**

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The International Student Association provides a forum for discussion and serves as a resource for information regarding all aspects of international social work. The association sponsors lectures, speakers and open discussions. All students, faculty or alumni who are interested in international social work are invited to become members or to attend meetings.

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## **Other student interest groups**

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The School of Social Work supports the development of groups that address a variety of student needs and interests.

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## **Doctoral Student Association**

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The Doctoral Student Association is a collegial association available to all doctoral students regardless of full- or part-time status. Its primary purpose is to provide information, resources, advocacy and support to students throughout the doctoral program experience. Governance of the association is conducted on a rotating leadership and consensual basis. Doctoral student representatives to various committees of the school governance structure are provided by the Doctoral Student Association.

## Master's degree courses in social work (SLWK)

### SLWK 601 Human Behavior in the Social Environment I

Semester course; 3 lecture hours. 3 credits. First of two foundation courses on human behavior in the social environment. Includes the influences of biological, psychological, spiritual, physical and socio-cultural forces on the coping efforts of various social systems. Provides a multidimensional perspective on human behavior of these systems, based on theory and research findings. Examines contemporary challenges facing these systems; impact of mechanisms of oppression as well as racial, ethnic, class, cultural, disability, sexual orientation and gender diversity on human behavior; and the reciprocal nature of interactions of persons, dyads, families, social groups, communities, organizations and social institutions in a multicultural society. Introduces theoretical perspective on individuals and family development throughout life.

### SLWK 602 Policy, Community and Organizational Practice I

Semester course; 3 lecture hours. 3 credits. Corequisite: SLWK 601. First of two foundation courses on social policy, policy practice and practice in communities and organizations. Surveys historical evolution of social welfare policy and contemporary provision of social welfare services, including the role of values in policy formulation and principles of social and economic justice. Introduces the social work role as change agent in legislative, community and organizational arenas. Uses social/behavioral knowledge and social work intervention models and applies analytical frameworks for assessing program, organizational and policy effectiveness. Develops skills in identification of need, designing strategies for change, and policy analysis.

### SLWK 603 Social Work and Social Justice

Semester course; 3 lecture hours. 3 credits. Examines social work's historical and current commitment to social justice as related to oppressed groups in a multicultural society. Enhances understanding of and appreciation for diversity in self and others. Addresses issues of power, inequality, privilege, and resulting oppression. Analyzes oppression resulting from persistent social, educational, political, religious, economic, and legal inequalities. Focuses on the experiences of oppressed groups in the U.S. in order to understand their strengths, needs, and including those distinguished by race, ethnicity, gender, age, sexual orientation, disability, immigration status, and class. Considers ethical dilemmas faced by social workers in empowerment and advocacy roles.

### SLWK 604 Social Work Practice with Individuals, Families and Groups I

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: SLWK 601. The first of two foundation courses on social work practice with individuals, families, and groups. Defines and describes the history, context, phases and processes of direct social work practice. Introduces basic knowledge, skills, and values necessary to provide a range of restorative, rehabilitative, maintenance and enhancement services. Emphasizes the multidimensional context in which intervention occurs. Introduces selected practice theo-

ries and models to guide intervention with an emphasis on work with individuals.

### SLWK 605 Social Work Practice with Individuals, Families and Group II

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 601 and 604. Pre- or corequisite: SLWK 610. Second of two foundation courses on social work practice with individuals, families, and groups. Extends application of beginning knowledge and skills to the phases of intervention with groups and families. Presents knowledge and skills of environmental intervention and termination. Introduces selected theories and models for social work practice with individuals, families and groups with attention to special population groups.

### SLWK 606 Policy, Community and Organizational Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 601 and 602. Corequisite: SLWK 610. The second of two foundation courses on social policy, policy practice and practice in communities and organizations. Examines values and ethical dilemmas facing professional social workers in organizations, communities and policy-making arenas. Explores legislative/political processes. Develops skills in legislative lobbying, advocacy, design of change strategies and tactics, policy analysis and task group leadership. Emphasizes reciprocal effects of policy on social work practice and implications for social and economic justice.

### SLWK 607 Social Work Practice with Individuals, Families, and Groups for Advanced Standing Students

Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the Advanced Standing Program; concurrent enrollment in SLWK 608, 611, 612. Reviews approaches, principles, techniques, and theories of social work practice with individuals, families, and groups. Emphasizes commonalities and differences among practice modalities, including differential assessment, intervention, and evaluation of outcomes. Focuses on the development of the professional self that incorporates the interplay of personal and professional values and social work practice with diverse populations.

### SLWK 608 Social Work Practice in Organizations and Communities for Advanced Standing Students

Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the advanced standing program; concurrent enrollment in SLWK 607, 611, 612. Presents social work theory and practice focusing on social policy, communities, agencies, and interventions in light of principles of social and economic justice. Introduces and analyzes the social work role of policy practitioner with its specific skills and tasks. Demonstrates the importance of understanding the community and the agency in social work practice. Provides skill building in advocacy, planned change, and policy and organizational analysis.

### SLWK 609 Foundations of Research in Social Work Practice

Semester course; 3 lecture hours. 3 credits. Introduces the methods of social work research and the roles of the social worker as consumer and scientist/practitioner, including problem formulation, research designs, measurement, data collection, and sampling. Focuses on the application of critical thinking skills and

research methods of clinical social work practice effectiveness research, the evaluation of social work programs and services, and developing the knowledge base for social work practice.

### SLWK 610 Human Behavior in the Social Environment II

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 601. Second of two foundation courses on human behavior in the social environment, covering the life course from conception through late adulthood and/or death. Includes influences of biological, psychological, physical, spiritual and sociocultural forces on individual and family coping efforts. Provides a multidimensional, multicultural perspective on the behavior of individuals and families, based on theory and research. Examines contemporary challenges facing individuals and families at various life stages. Focuses attention on the impacts of oppression, as well as racial, ethnic, class, cultural, disability, sexual orientation and gender diversity on human behavior; and the reciprocal nature of interactions of individuals, families and other social systems in a multicultural society.

### SLWK 611 Social Work Research for Advanced Standing Students

Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the advanced standing program; concurrent enrollment in SLWK 607, 608, 612. Reviews approaches to scientific inquiry in the development of knowledge for social work practice; problem formulation; concepts and operational definitions; measurement validity and reliability; selected social work research designs; planned data collection strategies and procedures.

### SLWK 612 Advanced Standing Field Instruction

Summer course; 3 days per week. 3 credits. Prerequisites: Admission to the advanced standing program; concurrent enrollment in SLWK 607, 608, 611. Reviews foundation-level knowledge, attitudes, and skills acquired through social work education at the undergraduate level. Requires application, refinement, and the active use of content from the advanced standing curriculum in supervised social work practice in a social agency. Final grade of "P" required to continue in program.

### SLWK 693-694 Foundation Field Instruction I and II

Continuous course; 2 days/14 hours per week. 3-3 credits. Pre- or corequisites: SLWK 601, 602, 604, 605, 606, 610. Provides opportunities to master essential social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the foundation curriculum. Grade of "PR" required for continuation from SLWK 693 to SLWK 694. Final grade of "P" required to continue in the program.

### SLWK 695 Block Foundation Field Instruction

Five days a week for one semester. 6 credits. Prerequisites: SLWK 601, 602, 603, 604, 605, 606, 609, 610. Option for part-time students only. Provides opportunities to master essential social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes the integration of content from all areas of the foundation curriculum. Grade of "P" required to continue in the program.

**SLWK 703 Mental, Emotional and Behavioral Disorders**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: Concentration standing. Reviews the classification, epidemiology, etiology and course of a range of mental, emotional and behavioral disorders across the life span. Emphasizes the critical analysis of existing or emerging theory, the impact of difference and diversity on the definition of dysfunction and distress, an appreciation of the "lived experience" of these disorders for clients and their families and the practical implications of this knowledge for relationship building and intervention planning in social practice settings today. Introduces knowledge of psychopharmacology related to social work interventions with mental, emotional and behavioral disorders.

**SLWK 704 Clinical Social Work Practice I**

Semester course; 3 lecture hours. 3 credits. Pre- and/or corequisites: M.S.W. concentration standing or permission of instructor. Prerequisite or corequisite: SLWK 703. First of two courses on advanced clinical practice with individuals, families, couples, and groups. Extends knowledge and skills obtained in foundation courses. Continues a multitheoretical orientation to intervention across fields of practice with emphasis on contemporary psychodynamic and cognitive behavioral approaches and their empirical support. Emphasizes multidimensional assessment and the differential application of therapeutic, supportive, educational, and resource management strategies to complex problems of children, youth, and adults. Examines the interdisciplinary context of practice and the impact of diversity on clinical practice.

**SLWK 705 Clinical Social Work Practice II**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: SLWK 704. Second of two courses on advanced clinical practice with individuals, families, couples, and groups. Continues a multitheoretical orientation to intervention across fields of practice with emphasis on integrated family systems theory and multidimensional family assessment. Focuses on differential application of psychodynamic, cognitive-behavioral, and family systems theories to a range of complex client problems and concerns with attention to diversity of socioeconomic status, race, ethnicity, age, poverty, gender, and sexual orientation. Introduces knowledge of pharmacology related to social work intervention.

**SLWK 706 Research for Clinical Social Work Practice I**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: SLWK 609 and M.S.W. concentration standing. Emphasizes further development of knowledge and skills for the scientific, analytic approach to clinical social work practice. Focuses on two parallel learning tracks: 1) application of research principles from SLWK 609 to the development of a feasible research proposal relevant to clinical social work practice; and 2) review of statistical inference and decision making, introduction to computer applications of univariate and bivariate analyses, presentation of visual and statistical techniques for single-system designs, and introduction to qualitative analytical approaches. Reviews ethical standards of scientific inquiry.

**SLWK 707 Research for Clinical Social Work Practice II**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: SLWK 706. Focuses on completion of the

research project approved in SLWK 706, including data collection, development of computer program files, data analysis, preparation of final report, and presentation of findings. Provides overview of multivariate statistical analyses. Emphasizes integrating project findings into knowledge base for clinical social work.

**SLWK 710 Concentration Social Policy**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on advanced policy analysis through an in-depth, focused examination of a particular social policy area or population. Extends basic knowledge and skills of policy formulation, development, and impact analysis/evaluation, as these affect practice on behalf of clients. Examines diversity of policy sources; value, political and economic determinants; policy formulation processes; the policy basis for current services; a broad range of potential need domains, and current programs and laws. Integrates knowledge of human behavior and the social environment relevant to the focal policy areas and pays special attention to issues of social and economic justice. Examines current policy issues, advocacy efforts related to these issues and practice strategies for effecting change.

**SLWK 711 Strategies for Social Work Planning and Administrative Practice**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: M.S.W. concentration standing or permission of instructor. Develops leadership and planning skills that guide the implementation of policy and practice in community and organizational settings. Present problem-solving strategies for planning, administration and management of community and organizational resources. Emphasizes planning context for diverse settings. Provides knowledge and skill for human and fiscal resource responsibilities, including fund raising. Examines ethical and justice implications of planning and administrative practice.

**SLWK 712 Social Work Planning and Administrative Practice I**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: M.S.W. concentration standing or permission of instructor. Presents knowledge and skills for social work leadership in administering, developing and advocating social service policies and programs that are socially and economically just. Examines underlying assumptions, political, value and ethical considerations in social service planning. Presents knowledge of organizational theories and analyzes the political context of problem solving in the internal and external environments of organizations and programs. Focuses on community and organizational planning theories and models of intervention in assessing needs, analyzing problems, determining feasibility and identifying emergent dilemmas. Emphasizes development of critical thinking and self-awareness about role responsibilities and ethical positions for organizational and community leadership at local, state, national and international levels.

**SLWK 713 Social Work Planning and Administrative Practice II**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: M.S.W. concentration standing and SLWK 712, or permission of instructor. Continues development of knowledge and skills begun in SLWK 712. Examines traditional and alternative strategies in formulating proposals to address human needs.

Emphasizes multiple program designs (e.g. direct service, advocacy, staff development and training, and community empowerment programs). Incorporates understandings of policies, community, and organizational behavior and change, and leadership styles and skills. Analyzes feasibility of interorganizational partnerships and community relationships. Focuses on financial and human resource acquisition and mobilization, monitoring, accountability and evaluation.

**SLWK 714 Research for Social Work Administration, Planning and Policy Practice I**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: SLWK 609 and M.S.W. concentration standing. Focuses on social work program and service evaluation including needs assessment, social indicators analysis, evidenced based practices, formative and summative evaluation designs using multiple method data collection and participatory approaches. Review of statistical inference and decision making, introduction to computer applications for quantitative data and methods for analysis of qualitative data. Application of ethical standards for evaluation involving human participants.

**SLWK 715 Research for Social Work Administration, Planning and Policy Practice II**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: SLWK 609, 714 and second year M.S.W. program standing. Focuses on evaluation of social work programs and services including data collection, data analysis, presentation of visual and statistical techniques for qualitative and quantitative evaluation methods, and dissemination of evaluation findings. Continues review of statistical inference and decision making. Emphasizes integrating evaluation findings into a knowledge base for social work administration, planning and policy practice using participatory approaches with stakeholders.

**SLWK 716 Concentration Social Policy for Social Work Administration, Planning and Policy Practice**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: M.S.W. SWAPPP concentration standing or permission of instructor. Extends SLWK 602 through 606 content on policy practice, organizations, communities and advocacy. Critically analyzes traditional and alternative theories and models of the policy-making process. Demonstrates how the policy process is the core principle for decision making in agencies, communities and legislatures. Develops advanced skills in policy analysis, policy formulation and place practice including advocacy. Emphasizes the relationship and impact of economic policies on clients, communities and agencies in light of principles of social and economic justice. Analyzes current regulatory and agency policies and their implications for policy practice/advocacy for effecting change.

**SLWK 717 Social Work Practice in the School Setting**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: M.S.W. concentration standing or permission of instructor. Emphasizes knowledge and skills of school social work practice with diverse populations in urban and rural settings. Presents historical context of social work practice and relevancy to current social work practice models. Uses an ecological perspective to conceptualize the interdependence of school, family, and community as complex interdependent systems. Addresses social justice concerns related to the social



worker's response to contemporary issues such as violence, racism, sexism, poverty and their impact on children and youth in educational settings. Critically analyzes current federal and state laws that under-gird service delivery to schools.

**SLWK 718 Social Work Practice in Child Welfare**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Provides an overview of the history of child welfare practice in the United States. Identifies the major social, demographic, and economic changes in society that impact children and families today. Focuses on the knowledge and skills of direct social work practice across a continuum of child welfare services including early intervention, family preservation, child protection, and permanency planning within the context of current practice issues. Critiques current child welfare practices and identifies the roles of a practitioner in direct child welfare service delivery.

**SLWK 723 Child Neglect and Abuse: Protective Service**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: MSW concentration standing or permission of instructor. Focuses on theoretical and practical knowledge of the causes, definitions and identification, reporting and investigation, and treatment of child neglect and abuse, and child sexual abuse. Analyzes family dynamics involved in physical and emotional child neglect, abuse, and sexual abuse. Emphasizes development and enhancement of skills and the use of differential therapeutic measures.

**SLWK 726 Social Work Practice and Health Care**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on social work in a variety of health care settings with a range of interventions from prevention and health promotion to end-of-life care. Explores ethical and legal issues and introduces frameworks for addressing ethical dilemmas. Examines the role of the social worker on an interdisciplinary team. Examines the influence of economics, political decisions, technology, changing demographics, and cultural, social and spiritual/religious experiences on individual health care decisions, access to health care, and definitions of health and illness.

**SLWK 728 The Interdisciplinary Team in Social Work Practice**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Explores definitions and analyzes interdisciplinary team approaches. Studies the roles and functions of participants on interdisciplinary teams. Emphasizes similarities and differences between social work and other disciplines as members of teams. Explores opportunities for, and obstacles to, effective service delivery by teams.

**SLWK 739 Social Work and the Law**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Overview of fundamental principles of Anglo-American law; structure and function of the legal system and its professional membership; lawyers and their working relationship with social workers. Emphasizes client-centered problems encountered in the legal community and the role social workers can play in helping clients deal with those encounters.

Explores issues relative to client needs such as welfare rights, consumer protection, mental health treatment, family-related law, and discrimination relative to education, housing, employment, health care. Discusses legal issues confronting social work, such as confidentiality, licensing, advocacy, witnessing.

**SLWK 740 Social Work Crisis Intervention and Planned Short-Term Treatment**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. The social work practice of crisis intervention and planned short-term treatment. Examines conceptual and theoretical aspects of the differential use of crisis intervention and planned short-term social work intervention. Explores direct interventions, consultation, collaboration, and service delivery issues.

**SLWK 745 Social Work Practice in Community Mental Health**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Addresses the specialized knowledge, values, and skills needed by social workers in community mental health settings. Builds on a biopsychosocial model of mental health/illness. Focuses on up-to-date psychotherapeutic, psychoeducational, and skill training approaches used with individuals, families and groups experiencing or affected by a range of mental health problems. Examines roles in interdisciplinary teamwork, case management, advocacy and medication management.

**SLWK 746 Social Work Practice and Psychopharmacology**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Reviews the historical, political, and ethical context of psychotropic medications in social work practice. Provides a basic overview of psychopharmacology. Identifies and debates contemporary social work roles in medication management. Presents necessary social work skills for effective collaboration with clients, families and other mental health practitioners on medication-related issues.

**SLWK 747 Social Work Intervention with Children and Adolescents**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Provides students with an opportunity for concentrated study and application of a range of specific models and techniques of intervention with children, adolescents and their families. Special attention will be given to diverse practice settings, as well as providing services to children and adolescents from diverse racial, ethnic, social, and sexual orientation backgrounds.

**SLWK 748 Group Methods in Social Work Practice**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Examines various approaches used by practitioners in their interventions with social work groups. Presents several models of groups, including treatment, educational, and mutual aid/self-help. Reviews topics including: agency conditions affecting practice with groups, planning a new group service, the multiple phases of work with groups, achieving individual change through the group process, tasks and tech-

niques for working with persons from at-risk populations in groups, and the evaluation of change effort. Builds on the content in the foundation practice course SLWK 605 Social Work Practice with Individuals, Families and Groups II.

**SLWK 749 Social Work Intervention in Substance Abuse**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Provides the historical influences, theoretical perspectives and requisite skills in the field of substance abuse and treatment. Familiarizes students with the physiological, emotional and behavioral manifestations of substance abuse and the role of the social worker in evaluation and intervention. Presents a variety of screening, assessment and interventive techniques applicable to a range of human/social service agencies for clinical practice in a managed care environment. Emphasizes current research and controversies in the field.

**SLWK 750 Ethics and Social Work Practice**  
Semester course; 3 credits. Prerequisites: M.S.W. concentration or Ph.D. program standing or permission of the instructor.

Examines the history and development of the values base and ethical principles of the social work profession. Investigates codes of ethics for professional practice, with special attention to the principles of human relationships, integrity, social justice and competence. Analyzes ethical dilemmas in social work practice. Considers mechanisms for the enforcement of ethical codes.

**SLWK 751 Social Work Practice and AIDS**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on information, knowledge and skills needed to provide social work services to persons with ARC and AIDS and their families. Emphasizes epidemiological material, psychological and psychosocial aspects of AIDS and ARC for understanding the context of social policies and social work intervention. Addresses differential application of social work roles and functions.

**SLWK 760 Family Theory and Therapy**  
Semester course; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Presents a conceptual base for the practice of family therapy. Extends knowledge and practice for family specialists and provides a theoretical base and practice applications of family therapy for other interested students.

**SLWK 761 Interpersonal Violence**  
Semester courses; 3 lecture hours. 3 credits.

Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on social worker's integral part in society's response to all forms of interpersonal violence at the policy and practice levels. Examines both theoretical and applied responses to rape, child abuse, spouse abuse and elder abuse and is intended to give students knowledge about the definitions, etiology and interventive processes with both victims and perpetrators. Investigates the social work role with the other major actors in the family violence field, such as police, attorneys, judges and other mental health professionals.

### **SLWK 765 Supervision**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: M.S.W. concentration standing or permission of instructor. Explores task components and responsibilities in supervision of the social worker. Emphasizes a conceptual framework for supervision, including knowledge base, methods, and skill in supervision. Attention to affirmative action programs in social service delivery systems.

### **SLWK 769 Women's Issues and Social Work Practice**

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Explores new perspectives on women and their changing roles as these affect social work practice; direct and indirect ways sexist attitudes are acquired and conveyed; effects of changing female roles of human behavior theory and its application, development of new life styles; social work theories and their relevance to today's world; current women's issues; and the social worker's role as counselor and advocate.

### **SLWK 770 International Social Work Study Abroad**

International study course; 3 credits. Prerequisites: M.S.W. program standing. Examines social work clinical and policy practice, social pedagogy and the social welfare system of another country that includes a field trip to the country. Examines a range of issues pertaining to the country, including: society, culture and history; social work education; the social welfare system; selected social programs; social work clinical and policy practice; and comparisons of these topics between the country and the United States. Requires completion of several course units before the study abroad program.

### **SLWK 773 Program Evaluation**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: M.S.W. concentration standing or permission of instructor. Presents methods, problems, and research findings related to the evaluation of social welfare programs. Examines research design options and methodologies available for program evaluation. Explores organizational and administrative contexts in which evaluation activities are initiated, supported, disseminated, and utilized. Presents data processing and the roles of data analysis and the computer in the evaluation of social welfare programs.

### **SLWK 791 Topical Seminar**

1.5-3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Presents and analyzes current social work practice issues in specialized areas of interest to social work.

### **SLWK 792 Independent Study**

1-4 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Open with faculty approval. A maximum of four independent study courses may be included in a student's educational program. The student will be required to submit a proposal for investigating some area or problem in social work not ordinarily included in the regular social work curriculum. The results of the student's study will be presented in a report.

### **SLWK 793-794 Concentration Field Instruction**

Continuous course; 21 hours per week. 3-3 credits.  
Prerequisite: M.S.W. concentration standing; pre- or corequisites: SLWK 703, 704-705, 706-707, 710 or

SLWK 711, 712-713, 714-715, 710. Provides opportunities to master advanced social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the concentration curriculum. Grade of "P" required for graduation. Grade of "PR" required for continuation in second semester of the practicum.

### **SLWK 795 Concentration Block Field Instruction**

Semester fieldwork; block field instruction (option for part-time students only) five days a week for one semester. 6 credits. Prerequisite: M.S.W. Concentration standing; pre or corequisites: SLWK 703, 704-705, 706-707, 710 and electives, or SLWK 711, 712-713, 714-715, 710 and electives. Provides opportunities to master advanced social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the concentration curriculum. Grade of "P" required for graduation.

## **Doctoral courses in social work (SWKD)**

### **SWKD 701 Quantitative Research Methods and Analysis I**

Semester course; 4 credits. Prerequisite: Master's level course work in research methods and introduction to statistics; graduate standing in social work or permission of program director. First semester of a two semester course sequence focused on concentrated study of principles of the quantitative, scientific method for knowledge building, and practice and policy related research. Special emphasis on the different stages of research methods, including problem formulation, sampling, measurement, design and data collection within the context of professional values, ethics and commitment to social justice.

### **SWKD 702 Quantitative Research Methods and Analysis II**

Semester course; 4 credits. Prerequisite: Master's level course work in research methods and introduction to statistics; graduate standing in social work or permission of program director. Second of a two-semester course sequence focused on concentrated study of principles of quantitative, scientific method for knowledge building, and practice and policy related research. Special emphasis is placed on the application of descriptive and inferential statistical techniques within the context of applied social work research.

### **SWKD 703 Philosophical Issues in Social Work Knowledge Building**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Admission to Ph.D. in social work or permission of program director. This seminar focuses on assisting seminar participants to develop and refine their understanding of the logical foundations and the underlying meta-framework for modes of inquiry in science. Of particular focus will be the social sciences including social work. Using a paradigm perspective, the seminar will investigate the epistemological, ontological and methodological implications for knowledge building for social work.

### **SWKD 704 Multiparadigmatic Qualitative Methods and Analysis**

3 credits. Focuses on assisting participants to develop and refine their understanding of, and skills in, qualitative research from multiple paradigmatic perspectives. Investigates a variety of qualitative strategies that allow for examination, exploration and/or description of phenomena by theory building, theory testing or constructing meaning. Emphasis will be on a range of qualitative methods for collecting empirical material, and on methods for the analysis of those data, including the use of computer analysis.

### **SWKD 708 Social and Behavioral Science Foundations for Social Work**

Semester course; 3 credits. Prerequisite: Admission to the Ph.D. program in social work or permission of program director. This doctoral seminar focuses on theories and conceptual approaches used as the knowledge base of social work. Emphasis is given to developing the abilities of students in identifying the essential elements of theory, determining the knowledge building purposes of theory, and articulating the rationale for selection of theories as a basis for scholarly inquiry. In addition, theories are critically evaluated for their implicit assumptions, values, empirical support and potential usefulness. Theories covered will be drawn from the social and behavioral sciences with an emphasis on those appropriate for the social change and social justice concerns of social work.

### **SWKD 710 Social Work, Social Welfare, and Social Thought**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Doctoral program admission or permission of instructor. Required seminar for social work doctoral students. Examines social work and its roles and functions in relation to contemporary social problems, social policy and social work practice interventions that provide solutions to these problems. Analysis of issues of social welfare and the social work profession relating to structure, functions and history from the perspective of social work values, ethics, professional standards and concern for social justice. Designed to foster a critical perspective on the profession in its environment and provide grounding in the historical and cultural traditions and major streams of social thought influencing the profession, its development, and the American system of social welfare.

### **SWKD 715 Development and Evaluation of Social Work Practice Theories and Models**

Semester course; 3 lecture hours. 3 credits. A required seminar for first year doctoral students that is sequential to and builds upon prerequisite first year theory and research courses. It focuses on the nature of theories, models and perspectives that guide social work practice. It includes historical and philosophical foundations of practice theories and frameworks to evaluate practice theory through the lens of social justice. Practice theories include all social work theories whose aim is change. The focus of change may be at the individual, diad, family, group, community, organizational, policy, and systems levels. Criteria for the selection of the level of the focus of change will be explored.

**SWKD 723 Social Work Education: Issues in Teaching**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: Graduate standing in social work or permission of the program director. Focus is on two central and integrated components of professional education: (1) examination of the development and dimensions of social work education and (2) exploration of theories of learning and teaching within the framework of professional social work education.

**SWKD 724 Social Work Models for Social Policy Analysis and Implementation**

Semester course; 3 lecture hours. 3 credits. Offered: Fall semester. Prerequisite: Completion of core curriculum. Selected social work models for social policy analysis. Examination of social work roles and functions in relation to social policy formulation, administration, and evaluation. Examination of historical and current social policy issues in selected social problem areas from the perspective of social work values, ethics, and professional standards.

**SWKD 791 Topical Seminar**

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Study of the current state of knowledge and research within a specialized area of concern to social policy and social work.

**SWKD 792 Independent Study**

Semester course; 1, 2, or 3 credits. May be repeated for a maximum of six credits, that count toward the 36 required credits. May then be taken for an additional 1-12 credits to accommodate the need for continuous enrollment required of all students between completion of required course work and passage of the comprehensive examinations. Prerequisite: Permission of the program director. Independent reading and study in selected areas under the supervision of a member of the faculty.

**SWKD 797 Directed Research**

Semester course; 3 credits. Pre-dissertation research project under faculty supervision.

**SWKD 898 Dissertation Research**

Semester course; 1-18 credits. May be repeated for credit. May be taken for additional credits until dissertation is accepted formally. Prerequisite: Successful completion of comprehensive examinations or permission of program director. Students are required to complete 18 credit hours.



# Professional Studies at VCU

Virginia Commonwealth University currently offers first professional degree programs leading to the doctor of dental surgery, doctor of medicine, doctor of pharmacy and doctor of physical therapy degrees.

## Professional programs admissions

For information about admission to MCV Campus professional programs, refer to professional sections of the schools of Allied Health Professions, Dentistry, Medicine and Pharmacy.

## General admission requirements and procedures

The Board of Visitors, the administration and the faculty of VCU are committed to a policy of equal opportunity in education and employment without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation or disability.

## Admission requirements

Admission requirements, entrance examinations and application materials for first professional programs may be obtained by contacting the appropriate admissions office, listed above. Other detailed information including financial aid opportunities, procedures for international students, regulations and procedures, academic, curricula and degree requirements are included in the section describing each professional program.

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## Admission through the University Honors Program

VCU undergraduate students participating in the University Honors Program may apply for guaranteed admission to certain professional programs before matriculation at VCU or early in their undergraduate studies. (The specific deadline for applying is set by each program.) Honors students who receive guaranteed admission may enter the programs of their choice provided they fulfill the requirements for graduation with University Honors and satisfy the curricular prerequisites of the program they plan to enter. In some programs, the requirement for standardized testing is waived.

To be granted guaranteed admission to any professional program, a student must submit a completed application form with three letters of recommendation to the appropriate admissions office as indicated previously. To be accepted into a Guaranteed Admission Program, a student must be accepted by the university, by the University Honors Program and by the admissions committee of the program the student wishes to enter. The admissions committee may require an interview. Final notification of guaranteed admission is made by the appropriate school's admissions office. For additional information, refer to the Undergraduate Bulletin.

The following professional programs offer guaranteed admission through the University Honors Program:

### Doctor of Dental Surgery

### Doctor of Medicine

### Doctor of Pharmacy

### Doctor of Physical Therapy

## International students

International students should refer to the appropriate professional program's chapter for information regarding international student admission guidelines.

## Financial aid

Current information on financial aid programs, policies and procedures are available on

### Doctor of Dental Surgery (D.D.S.)

School of Dentistry  
Ronald J. Hunt, D.D.S.  
Dean

### Dentistry Admissions

Lyons Building, Room 309  
520 N. 12th St. • P.O. Box 980566  
Richmond, VA 23298-0566  
(804) 828-9196

### Doctor of Medicine (M.D.)

School of Medicine  
Heber H. Newsome, M.D.  
Dean

### Medicine Admissions

Cynthia M. Heldberg, Ph.D.  
Associate Dean  
Sanger Hall, Room 1-008  
1101 Marshall St. • P.O. Box 980565  
Richmond, VA 23298-0565  
(804) 828-4006

### Doctor of Pharmacy (Pharm.D.)

School of Pharmacy  
Victor A. Yanchick, Ph.D.  
Dean

### Pharmacy Admissions

Thomas P. Reinders, Pharm.D.  
Associate Dean  
R. Blackwell Smith Building  
410 N. 12th St. • P.O. Box 980581  
Richmond, VA 23298-0581  
(804) 828-3000

### Doctor of Physical Therapy (D.P.T.)

School of Allied Health Professions  
Cecil B. Drain, Ph.D.  
Dean

### Physical Therapy Admissions

Annabel M. Edge, M.S., P.T.  
Admissions Coordinator  
1200 East Broad Street, Room B-216  
P.O. Box 980224  
Richmond, VA 23298  
(804) 828-0234

the VCU Web site at <http://www.vcu.edu/enroll/finaid>.

To obtain printed materials or additional information, call or visit the appropriate financial aid office listed.

**Schools of Allied Health Professions, Nursing, and Pharmacy**

Sanger Hall, Room 1-055  
1101 E. Marshall St.  
P.O. Box 980244  
Richmond, VA 23298-0244  
(804) 828-9800  
Fax (804) 828-2703

**School of Dentistry**

Lyons Building, Room 309  
520 N. 12th St.  
P.O. Box 980566  
Richmond, VA 23298-0566  
(804) 828-9953  
Fax (804) 828-5288

**School of Medicine**

Sanger Hall, Room 1-008  
1101 E. Marshall St.  
P.O. Box 980565  
Richmond, VA 23298-0565  
(804) 828-4006  
Fax (804) 827-5555  
E-mail: jmcramer@vcu.edu

**eServices – online records access**

Students are encouraged to use eServices, a password-protected service for viewing VCU student records online, to check the status of their financial aid application and award package. Students also may register for classes, print bills, and more. The eServices Web site is located at <http://iserver.adm.vcu.edu/students/>.

**E-mail – official method of communication**

Students are required to obtain an official VCU student email account within one week of the beginning of their first semester of enrollment. Students are responsible for reading in a timely fashion University-related communications sent to their official VCU student email account. The Office of Financial Aid uses email to provide financial aid information, to request documentation to support financial aid application data, and to provide financial aid application status and award information. Information on how to set up an account is available online (go to the "Academic" section of "Getting a Computer Account" at [http://www.vcu.edu/it/computer\\_accounts.html](http://www.vcu.edu/it/computer_accounts.html)).

**Identification requirements**

Students must provide picture identification, preferably a VCU Card, for in-person access to financial aid records. For the student's protection, information provided

over the telephone and email may be limited if the financial aid staff member is not confident of the student's identity.

**Eligibility for financial aid**

Most students are eligible for some type of financial aid regardless of family financial circumstances. Basically, to receive aid from any of the federal or state student aid programs, students must:

- submit a Free Application for Federal Student Aid (FAFSA) or Renewal FAFSA designating VCU (school code 003735) to receive FAFSA results
- demonstrate financial need, except for some loan programs.
- have a high school diploma or a General Education Development (GED) Certificate.
- be enrolled or accepted for enrollment to an eligible degree or certificate program.
- be enrolled at least half time (five or more graduate credit hours).
- be a U.S. citizen or eligible noncitizen.
- have a valid Social Security number (unless from the Republic of the Marshall Islands, the Federated States of Micronesia, or the Republic of Palau).
- meet Reasonable Academic Progress (RAP) standards as defined by the VCU Office of Financial Aid (the full VCU RAP policy is available online at <http://www.vcu.edu/enroll/finaid>).
- certify that federal and state financial aid will be used for educational purposes only.
- not be in default on a federal student loan and not owe money on a federal student grant.
- comply with the Selective Service registration, if required.
- not be convicted under federal or state law of sale or possession of illegal drugs.

Detailed information can be found in the federal Student Guide, available in print form from the VCU Office of Financial Aid or electronically ([http://www.ed.gov/prog\\_info/SFA/StudentGuide](http://www.ed.gov/prog_info/SFA/StudentGuide)) and on the VCU Office of Financial Aid Web site (<http://www.vcu.edu/enroll/finaid>).

**Applying for financial aid**

The financial aid application process for the 2003-04 academic year begins Jan. 1, 2003. All students are encouraged to complete and submit the Free Application for Federal Student Aid (FAFSA) as soon as

possible after Jan. 1, designating VCU (school code 003735) to receive the results. In order to reduce problems, errors and omissions on the FAFSA, students are encouraged to apply electronically using FAFSA on the Web (available online at <http://www.fafsa.ed.gov/>). Once the FAFSA is filed, the federal processor will send the student a Student Aid Report (SAR) or electronic SAR Acknowledgement, and also will electronically send the information to the VCU Office of Financial Aid, if VCU was listed as a school to receive the data. If additional information is needed to complete processing of the application, the VCU Office of Financial Aid will send the student a request for additional information. Responding promptly to such requests will ensure timely processing of the application. Once the review of FAFSA data has been completed, the Office of Financial Aid will send the student a Financial Aid Notification.

Please note that health profession students (dentistry, medicine, nursing or pharmacy) must provide both student and parental information on the FAFSA to apply and receive consideration for Title VII grants and loans from the Department of Health and Human Services.

**Priority filing dates**

The VCU Office of Financial Aid recommends electronically filing the FAFSA by March 1\*. Students should complete the FAFSA using data from their completed tax returns. If necessary, they may use estimated tax return data in order to meet the VCU priority filing date but should be prepared to submit a copy of their completed tax returns and W2 forms to VCU as soon as possible. Students will receive their Financial Aid Notification after their FAFSA application data has been verified. If students have not applied for financial aid in a timely manner, they may want to participate in the VCU Installment Payment Plan, which budgets each semester's bill over four payments. Information about this plan can be found on the Student Accounting Department's Web site (<http://www.vcu.edu/enroll/sa/payment/ipp.html>).

\* Students who do not have access to the web may apply using the paper FAFSA, available through VCU, high schools, colleges and most public libraries. Those students completing a paper application should mail it to the federal processor by Feb. 1.

## Summer studies

Limited financial aid may be available during the Summer 2004 semester. Students applying for the summer semester must file the 2003-04 FAFSA by March 1, 2004. Students interested in financial aid for the Summer 2004 semester should obtain a VCU Summer Studies Schedule of Classes (available in March 2004) for more details.

## Study abroad

Financial assistance is available to eligible students enrolled in approved study abroad programs. All study abroad programs must be coordinated through the Office of International Education at (804) 828-8471. Students should work with a financial aid counselor to coordinate aid for their study abroad program. Information about financial aid and study abroad is available online at [http://www.vcu.edu/oie/eao/w\\_intro.html](http://www.vcu.edu/oie/eao/w_intro.html).

## Quality assurance

To ensure that information provided on the Free Application for Federal Student Aid (FAFSA) is accurate, a student's application may be selected for review at any time during an enrollment period, and the student will be requested to provide documentation that supports the information. By signing the FAFSA, the student (and the student's parents or spouse, if applicable) agreed to furnish such documentation. If the documentation is not provided when requested, financial aid awards will be canceled and any funds already disbursed may need to be repaid.

## University bill

The Student Accounting Department sends bills for tuition, fees, and other university charges to students whose financial aid will not cover their university charges. When financial aid awards (grants, scholarships, and loans) are not enough to pay university charges, the remaining balance must be paid from personal funds, credit card, or the VCU Installment Payment Plan. Federal Work-Study awards will not be deducted from university charges because those funds are paid directly to the student, based on hours worked. Any outstanding balance owed will hold a student from registration for courses.

## Financial aid appeals

Financial aid eligibility decisions are made using federal, state and institutional regulations and policies. Students may appeal their award offers if special circumstances warrant a review. Reasons for an appeal might include one of the following documented unusual circumstances:

- loss or reduction of employment earnings
- disability or death of parent or spouse
- separation or divorce
- loss or reduction of untaxed income
- losses due to a natural disaster
- unusually high educational program costs
- unusual medical expenses
- dependent and child care expenses

Any financial aid staff member can advise a student about the procedures on how to file an appeal.

## Federal financial aid refund policy

Students who receive federal Title IV grant or loan assistance and withdraw from VCU before completing 60 percent of the semester (as measured in calendar days) must have their eligibility recalculated based on the federal Return of Title IV Funds formula. This federal formula specifies that a student's financial aid eligibility must be recalculated based on the aid the student has "earned" (based on the number of days that the student was enrolled or attending VCU prior to withdrawal). Any unearned aid (for the period of enrollment that the student did not complete from the date of withdrawal to the end of the semester) must be returned to the appropriate Title IV programs from which the student was awarded.

For VCU students who withdraw prior to completing 60 percent of the semester, they will have to return or repay all or a portion of the aid funds that had been disbursed to their VCU account. As a result, students who withdraw prior to completing 60 percent of the semester may be responsible for all or a portion of their tuition/fee bill that was previously paid by financial aid sources.

Examples are available online (go to <http://www.vcu.edu/enroll/finaid/links> and click on "Financial aid implications if you withdraw from VCU").

## Reasonable Academic Progress

To be eligible to receive financial aid at VCU, students must make Reasonable Academic Progress (RAP). RAP is a combination of qualitative and quantitative

components. RAP is measured by:

- Completion rate. The completion rate is measured by the number of credit hours earned divided by the number of credit hours attempted. All students must successfully complete at least 67 percent of all credit hours attempted (withdrawals, incompletes and repeated courses also are considered attempted credit hours).

The Office of Financial Aid will perform a periodic RAP review for students who receive or apply for financial aid. The reviews are typically performed at the end of the spring semester and must be completed at least once per academic year.

Students will be alerted with warning letters, whenever possible, to provide them with notice that their financial aid may be in danger of being suspended. When students fail to meet RAP requirements, they will receive suspension letters indicating that they are ineligible to receive further financial aid. Students whose eligibility for financial aid has been suspended may submit an appeal if mitigating circumstances prevented the student from maintaining RAP.

For more detailed information about the VCU Reasonable Academic Progress policy, visit the Office of Financial Aid Web site (<http://www.vcu.edu/enroll/finaid>).

## Types of financial aid

There are three basic types of financial aid: loans, grants and work-study. Each type has different features and advantages.

### Loans

In terms of total dollars available, long-term federal loan programs provide the most dollars. Federal loans must be repaid after the grace period and/or deferment periods have expired. Students must generally remain enrolled at least half-time (five credit hours for graduate students). Multiple repayment plans may be available for most federal loans. Selected loan programs include:

- Federal Direct Loan (subsidized and unsubsidized)
- Health Professions Student Loan
- Loan for Disadvantaged Students
- Nursing Student Loan
- Primary Care Loan

### Grants

Contact individual academic departments for information about grant or scholarship programs.

## Work-study

Work-study is a form of financial aid that pays wages for work performed through employment. Work-study positions are located on-campus and in approved off-campus locations. Hourly wages will vary depending on skills and experience. Job listings are posted to the Career Center's Web site (<http://www.students.vcu.edu/careers>). When interviewing for work-study positions, students should take copies of their Financial Aid Notifications to show prospective employers.

## Veteran and reservist educational benefits

Available veteran and reservist educational assistance programs include:

- Montgomery GI Bill – Active Duty (Chapter 30)
- Vocational Rehabilitation (Voc Rehab, Chapter 31)
- Veterans Education Assistance Program (VEAP, Chapter 32)
- Survivors' and Dependents Educational Assistance Program (DEA, Chapter 35)
- Montgomery GI Bill – Selected Reserves (Chapter 1606)
- Tutorial Assistance Program
- VA Work-Study Program
- Virginia War Orphans Education Program (WOE)
- Diplomatic Security and Antiterrorism Assistance

Detailed information about eligibility for these programs is available on the Web (<http://www.vcu.edu/enroll/finaid>). To obtain printed material, contact:

### Veterans Affairs Office

Office of Financial Aid  
901 W. Franklin St., Room 113  
Richmond, VA 23284-3026  
(804) 828-6166  
Fax (804) 827-0060  
E-mail: [jmchambe@vcu.edu](mailto:jmchambe@vcu.edu) or [faidmail@vcu.edu](mailto:faidmail@vcu.edu)

Eligible veterans must comply with the following requirements to receive educational benefits as students:

1. The veteran must apply or be accepted into a degree- or certificate-seeking program.
2. The veteran must request certification after registering for courses each semester and each summer session from the Veterans Affairs Office.

3. The veteran may be eligible to use benefits for only those courses applied toward a degree or certificate program.
4. The veteran is not eligible to use benefits for courses taken on an audit basis. If repeating a course or taking a course with no credits, the veteran must notify the Veterans Affairs Office.
5. The veteran is responsible for ensuring that transcripts are evaluated for transfer credits to be accepted by VCU. The veteran must submit this information to the Veterans Affairs Office for transmittal to the Veteran's Administration Regional Office.
6. The veteran must notify the Veterans Affairs Office if planning to drop or withdraw from classes or stop attending VCU.

## Virginia War Orphans Education Program

The Virginia War Orphans Education Program provides educational assistance for children of certain veterans or service personnel. Applications are available at the VCU Veterans Affairs Office. Students should begin the application process at least four months before beginning studies at VCU.

Eligibility for this assistance is contingent upon the following:

1. the applicant must be no less than 16 and no more than 25 years old,
2. one of the applicant's parents must have served in the U.S. Armed Forces and must be permanently or totally disabled due to war or other armed conflict, or
3. one of the applicant's parents died as a result of war or other armed conflict, or
4. one of the applicant's parents is listed as a prisoner of war or missing in action, or
5. the applicant's parent, on which eligibility is based, has been a resident of Virginia at the time of entry into active military duty, or
6. the applicant's parent, on which eligibility is based, has been a resident of Virginia for at least 10 consecutive years immediately before date of application, or
7. the surviving parent has been a resident of Virginia for at least 10 years prior to marrying the deceased parent, or must have

been a resident of Virginia for at least 10 consecutive years immediately prior to the date on which the application was submitted by or on behalf of such child for admission to any educational or training institution in Virginia.

Those eligible for the Virginia War Orphans Education Program are entitled to a tuition-free education at state-supported educational or training institutions on an annual basis. (Summer school also may be included in the annual certification of students.) Eligible students can use this benefit to pursue any vocational, technical, undergraduate or graduate program of instruction. Generally, programs listed in the academic catalogues of state-supported institutions are acceptable provided they have a clearly defined educational objective, i.e., certificate, diploma or degree.

## Professional programs tuition and student fees

Students must pay all applicable tuition, room, board and other fees when due, as described in this section. Students who fail to pay these charges on time may be assessed a late payment fee. The university reserves the right to revise or alter all tuition and fees, regulations pertaining to student fees and collection procedures at any time. In addition to expenses billed by the university, students should make allowances for books, clothing, supplies, travel and other out-of-pocket costs when figuring their total yearly expenses at the university.

## Student Financial Responsibilities

Students who enroll:

- Are responsible for full payment of tuition and fees generated from their registration.
- Are responsible for full payment of all room, board and other applicable miscellaneous charges.
- Are responsible for keeping a current permanent mailing address on file with the Office of Records and Registration. Failure to receive an invoice because of an incorrect address does not relieve responsibility for timely payments.
- Are responsible for establishing an official VCU e-mail address and reading their e-mail on a regular basis, since e-mail will be used by faculty



and university offices to deliver important communications.

Tuition and fees are categorized and described on the Student Accounting Web site at <http://www.vcu.edu/enroll/sa/tuition>.

All charges are subject to change by decision of the Board of Visitors.

## University fee

This fee is used by the university to support student facilities, campus development, inter-collegiate athletics and other programs. Full-time students pay a flat-rate university fee each semester. Part-time students pay this fee on a per-credit basis.

## Student activity fee

This fee is used to support social, cultural and other student activities on the Academic Campus. These activities include concerts, plays, student organizations and publications.

Full-time students on the Academic Campus pay a flat-rate student activity fee, while part-time students on the same campus pay this fee on a per-credit basis. Students on the MCV Campus are not charged this fee.

## Student Government Association fee

This fee is used to support social, cultural and other student activities on the MCV Campus. It is determined and assessed by the Student Government Association on the MCV Campus. Academic Campus students are not charged this fee.

## Student health fee

All full-time students on both campuses must pay the student health fee. Part-time students may participate in the University Student Health Services on an elective basis by paying the student health fee. The University Student Health Services offers unlimited office visits for acute and chronic ailments, after-hours emergency room referrals and laboratory tests, among other services.

## Technology fee

The technology fee is charged to all undergraduate, graduate and professional students in all programs. Full-time students pay a flat rate. Part-time students pay a per-credit-hour rate. The fee is used to fund improved access and assistance with information technology.

## Off-campus fees

The university fee, the student activity fee, the student government association fee (except School of Social Work) and the student health fee are not charged to students taking off-campus classes.

## Special fee charges

Because of specialized programs, various schools and departments may charge each student additional fees to cover special materials, equipment breakage and other costs. For specific information about special fees, refer to the Student Accounting Department Web site or to the specific school or department section in this bulletin.

## Tuition determination and student classification

Tuition is determined by the number of credit hours a student is taking, the student's residency classification, course of study and classification level.

## In-state residency

Eligibility for in-state tuition benefits is determined by Section 23-7.4 of the Code of Virginia. Refer to "Appendix B" of this bulletin for the complete code.

All applicants to VCU who want to be classified as Virginia residents must complete the Application for Virginia In-state Tuition Rates included in the graduate application. The residency determination of the applicant will be conveyed at the time of admission.

New students who have been classified initially as non-Virginians for tuition purposes may request a review of the initial residency determination by contacting Records and Registration/Residency, (804) 828-0366. The residency officer may request that the applicant complete a Student Supplemental Application for Virginia In-state Tuition Rates and submit supporting documents for additional clarification. Continuing students desiring a change of residency status to in-state tuition rates must submit the supplemental application along with supporting documentation. Requests and applications for a second review must be submitted to the residency officer by the last day of add/drop week for each semester; however, it is strongly recommended that applications be submitted by the appropriate deadline: fall semester, Aug. 1; spring semester, Dec. 1; summer session, May 1.

Students will be notified by mail of decisions regarding residency status. The Financial Aid and Student Accounting departments also will receive official notification of residency decisions. Any denial for a change in residency status will include procedures for appeal of the intermediate decision. Students who submit fraudulent applications, falsify documentation or conceal information will be subject to reclassification, payment of all nonresident fees owed and university discipline.

## Student billing

The Student Accounting Department issues bills to students showing charges for the following fees: tuition, student activities fee, student government association fee, technology fee, university fee, private music lessons, school major fees, special course fees, course materials fees, dental kits, disability insurance, room rent, board fees, communication fees, student health fee and study abroad fees.

Tuition and fees for preregistered students, along with charges for room and board where applicable, are due by the beginning of each semester. All other students will be billed after the registration period and should pay upon receipt of the invoice.

Students who have enough financial aid to cover their charges will not be sent bills. Students with current charges of \$100 or greater are eligible to participate in the university's Installment Payment Plan, offered during the fall and spring semesters. The Installment Payment Plan distributes the cost of tuition, fees, room and board, and communications fee for the semester into four equal installments. The fee per semester is \$25, paid with the first installment. An application and information about how to sign up for the payment plan will be included with the bill.

## Drop vs. withdraw

**Drop** – charges are removed to indicate that the student never attended the class. The student is not eligible to receive financial aid, and any financial aid already credited to the student's account based on the original course registration will be removed from the student's account and may create a balance due to the university.

**Withdraw** – results in the academic grade of "W." Charges are assessed and adjusted according to the University

Refund Policy. Students may owe a balance to the university.

## Refund of tuition and fees

The official university tuition and fee policy applicable for the fall and spring semesters only (excluding short courses) is outlined below. Refunds are calculated on a course-by-course (per credit hour) basis, disregarding the full-time cap amounts. Students who are enrolled full-time and withdraw from courses may not receive a refund.

- Students dropping/withdrawing from courses through the first week of class will be entitled to a 100 percent refund of tuition and fees.
- Students withdrawing from courses through the second week of class will be entitled to an 80 percent refund of tuition and the university fee.
- Students withdrawing from courses through the third week of class will be entitled to a 60 percent refund of tuition and the university fee.
- Students withdrawing from courses through the fourth week of class will be entitled to a 40 percent refund of tuition and the university fee.
- Students withdrawing from courses after the fourth week of class are not entitled to receive a refund of tuition and fees.

Students in off-campus courses are subject to the same refund policy as all other university students if the class is scheduled on the regular semester schedule. If the off-campus course is shorter or longer than the academic semester, the refund dates are adjusted accordingly at the request of the Off-campus Programs Office.

The refund policy and deadlines of the English Language Program (ELP) are different from the university's refund policy for academic courses. Details of the policy may be obtained from the English Language Program Office.

A full refund for Holiday Intersession will be granted if the course is dropped before 4:30 p.m. on the day of the first class meeting. Partial refunds are not granted.

A full refund for summer tuition and applicable fees will be granted if the course is dropped no later than the day following the first day of a given class. (This policy also is applicable if the class does not meet on two consecutive days.) Students reducing their academic course loads to fewer than full time (12 credits for undergraduates and nine credits for graduates) before the end of the last day to drop a course will be entitled to a refund of tuition and applicable fees reflecting

the reduced course load. Partial refunds are not granted for the summer session. This same refund policy also applies to short courses offered during the fall and spring semesters.

Students who are financial aid recipients and withdraw from all courses prior to completing 60 percent of the semester are subject to the Federal Return of Title IV Funds Policy. For more details see Federal Financial Aid Refund Policy. The remaining credit balance, if any, will be refunded to the student.

Refunds will be computed based on the actual withdrawal date certified by the Office of Records and Registration. Refunds will not be made to students who do not attend classes and have not completed the required withdrawal procedure. Refund processing may take approximately two weeks. Exceptions to this refund policy are made only in rare instances. Written application for an exception must be filed in the Student Accounting Department to the Refund Appeals Committee within five years.

Students will not be entitled to a refund of room fees if:

- they are suspended from the residence halls for disciplinary reasons,
- if they voluntarily withdraw from the university residence halls but remain registered for any course(s) at the university unless clearance is granted through the Housing/Residence Education Office, unless they have completed the withdrawal procedures through the Housing Office.

Cancellations or changes to Dining Plans will be accepted up to 4 p.m., Friday of the second week of classes.

Refer to the Room and Board Contract Terms and Conditions sheet for additional information.

Requests for refunds that are not generated from the overpayment of financial aid should be made in writing to: VCU Student Accounting Department, P.O. Box 843036, Richmond, VA 23284-3036. Refund request forms are available at the Student Services Centers, 827 W. Franklin St., Room 104 or 1101 E. Marshall St., Room 1-055.

In accordance with credit card regulations, the university will refund any credit balance that may result on a student's account as the outcome of a credit card payment back to the credit card account. The remaining credit balance, if any, will be refunded to the student.

Students are responsible for paying any increase in charges that may occur after the generation of any refund.

## Outstanding Charges

Students who fail to meet payments when due will be assessed late payment penalties and will be denied registration for future classes until they have paid all accrued amounts owed. Students with balances owed to the university will not be issued degrees, transcripts of grades, or graduate reports until all charges are paid in full.

Any communication disputing an amount owed, including an instrument tendered as full satisfaction of a debt, must be submitted to the Director of Student Accounting, Student Accounting Department, Virginia Commonwealth University, P.O. Box 843036, Richmond, VA 23284-3036.

Pursuant to Section 2.2-4805 et seq., of the Code of Virginia, and in accordance with rules and regulations promulgated by the State Comptroller and Attorney General of the commonwealth of Virginia, VCU will charge interest, costs and fees on all accounts past due.

VCU is participating in the Virginia Set-off Debt Collection Act of 1981. Under the provisions of this act, a Virginia individual income tax refund will be subject to the university's claim for unpaid balances of tuition and fees.

A student who pays a past due balance with a dishonored check may be subject to his or her current and/or future registration cancelled. A charge is levied for all dishonored checks.

## General academic regulations

### University rules and procedures

Each member of the VCU community has certain responsibilities, rights and privileges. These are stated in some detail in the VCU Rules and Procedures, and all students are responsible for being familiar with provisions of this document. The rules and procedures are printed in the campus calendar and also are available at the Office of the Dean of Student Affairs. This document also provides for the process whereby disciplinary action, including separation from VCU, may be taken against a member of the university community as a result of behavior which is in violation of the prohibited conduct as stated in the VCU Rules and Procedures.

Students at VCU have a right to appeal actions of an academic nature. If such action involves a course grade, the Grade Review Procedures should be followed. If such action

involves computing, the Computer Ethics Policy should be followed. If such action involves dishonesty, the Academic Integrity Policy for Academic Campus students should be followed.

All students enrolled in courses on the MCV Campus are subject to the Honor System of the MCV Campus and, as such, are required to sign an Honor Pledge Card. Copies of the Honor Code and Pledge Cards are available in Office of Records and Registration, Sanger Hall, Room 1-055.

In addition to those standards of conduct described in VCU Rules and Procedures and the MCV Campus Honor Code, which applies to all students enrolled on the MCV Campus, a student enrolled at the university may be dismissed from the school in which enrolled for failure to meet prescribed academic program requirements. Students appealing termination from a graduate program/department should first pursue appeals at the department and/or the school level. After receiving a decision from the department and/or school, a student has the option of filing an appeal with the dean.

VCU seeks to foster insight, imagination, creativity, resourcefulness, diligence, honesty and responsibility as well as the education of the men and women enrolled in its graduate programs. Such an enterprise can take place only where the highest standards of academic integrity exist.

Academic dishonesty is the giving, taking or presenting of information or material by students with the intent of unethically or fraudulently aiding themselves or others on any work that is to be considered in the determination of a grade or the completion of academic requirements. Students in doubt regarding any matter related to the standards of academic integrity in a given course or on a given assignment should consult with the faculty member responsible for the course before presenting the work.

## Effective bulletin

The bulletin of record for a professional student is the Graduate and Professional Programs Bulletin in effect at the time of the student's official admission to the degree program (as specified in the student's official letter of admission). The effective bulletin contains the official requirements that the student must complete to earn the degree. A student who does not maintain continuous enrollment must re-apply to the program and will be subject to the requirements of the bulletin in effect at the time of readmission.

Exception to this policy must be approved by the student's dean or dean designee.

## Immunization requirements

VCU requires that all full-time students supply validated immunization records to University Student Health Services. This requirement must be completed prior to registering for second semester. Failure to meet these state law requirements will result in a hold placed on the student's second semester registration. The hold can be removed only upon receipt of the student's documented records.

The immunization record must be completed fully and accurately and also must be accompanied by documentation that the vaccines were given. This completion may be done in several ways. For example:

1. students may have their physicians transfer the information from their medical records and sign the forms verifying their accuracy, or
2. students may complete the forms using information received from their local health departments or from the armed services, but they then must attach validated copies of supporting documentation.

Many high schools require validated immunization records from students. If students recently have graduated from high school, their immunization records may still be available. They may request that the high school provide them with a copy of their immunization records.

If students cannot provide documented evidence of full immunization according to VCU guidelines, then the students must see their family physicians or health departments and receive updated immunizations. Most city and county health departments offer immunization clinics (Richmond City Health Department, 500 N. 10th St., Room 114).

Immunity to the following diseases must be documented as specified on the forms supplied by the School of Graduate Studies with the formal offer of admission.

**Tetanus.** Documentation of (1) is requested. Documentation of (2) is required. (1) Primary immunization series, including month/day/year of each dose, and (2) Tetanus/diphtheria (Td) booster (month/day/year) within the past 10 years.

**Diphtheria.** Documentation of both (1) and (2) is requested. (1) Primary immunization series, including month/day/year of each dose, and (2) Tetanus/diphtheria (Td) booster, including month/day/year within the past 10 years.

**Polio.** (1) Primary immunization with a total of three doses of OPV (oral Sabin) or (2) primary immunization with a total of four doses of IPV (injected Salk). Note:

Documentation of prior vaccination against polio, including month/day/year of each dose, is requested; however, if not completed in the past it is not recommended that the student complete the primary polio series unless the student is less than 18 years old or is planning travel to an area endemic or epidemic for polio.

**Rubeola (Measles).** Documentation of one of the following is necessary: (1) Born before 1957 and, therefore, considered immune, (2) two doses of the measles vaccine both administered after 1967 and given after the first birthday at least one month apart (document month/day/year), (3) physician's certification of diagnosis of measles including month and year of occurrence, or (4) documentation of immune titer proving immunity. Note: Measles vaccine given before 1968 is not acceptable.

**Mumps.** Documentation of one of the following is necessary: (1) mumps vaccine given after age one, month/day/year documented, (2) copy of report of immune titer, proving immunity, (3) physician's certification of diagnosis of mumps, including month and year of occurrence or (4) birth prior to 1957 (presumption of immunity).

**Rubella (German Measles).** Documentation of one of the following is necessary: (1) Rubella vaccine given after one year of age (document month/day/year) or (2) copy of report of immune titer proving immunity. Note: A history of disease is not acceptable. Rubella vaccine given before June 9, 1969 is not acceptable.

**TB Skin Test** (ppd) must be performed at University Student Health Service Office once student is attending classes.

**Meningococcal vaccine** is recommended to freshmen students residing in dormitories. The vaccine is available to any student wishing to reduce their risk for the disease.

Students with questions should contact the immunizations staff of University Student Health Service.

Students should refer to appropriate professional program dean's office for information on other immunization requirements.

### MCV Campus

VMI Building, 1000 E. Marshall St., Room 305  
P.O. Box 980201  
Richmond, VA 23298-0201  
(804) 828-9220

## Withdrawal policies

**Leave of absence.** Students may request a leave of absence from a program through written appeal to their advisers. The adviser will forward the request, following departmental governance procedures, along with a recommendation to the dean who will respond for the university. Students who do not register for courses for more than one calendar year and who have not been granted a leave of absence must reapply for admission to VCU and to the degree program.

**Withdrawal from the university.** To withdraw officially from VCU, a student must submit a complete Official Withdrawal Form to Records and Registration before the end of the eighth week of classes. The Official Withdrawal Form is obtained from Records and Registration, 827 W. Franklin St., Room 104. Failure to complete this form may result in the assignment of failing grades in all or some of the courses.

The student's permanent academic record will indicate a grade of withdrawn ("W") for all courses in which the student was enrolled.

**Health-related withdrawals.** While students are expected to work toward completion of their degrees without interruption, health-related problems may necessitate withdrawal from the university.

- Some schools require a statement from a physician indicating the nature and severity of the condition, when a student should stop attending classes, and the estimated date of return to school.
- In the event that a student's health problem poses a danger to the student, to patients or to others with whom the student may come in contact and the student is unable or refuses to initiate steps to withdraw as stated above, administrative withdrawal of the student may be made by the dean upon consultation with the appropriate faculty and a qualified physician.
- Because curricular and course content changes may occur and a student's progress toward a degree may be affected adversely because of an extended absence, specific time periods may be imposed by individual schools with respect to the length of time allowed for absence from school. If there is a delay in return beyond the allotted time period without written consent of the dean, the student may petition for return with advanced standing.
- Some schools require that prior to return to school, the student must sub-

mit to the dean a statement from a physician. This statement should document that the condition that necessitated the withdrawal has been corrected to a point where the student can complete successfully all curriculum requirements with reasonable accommodation including classroom, laboratory, clinical and fieldwork experience.

## Grade review procedure

If a student thinks that a grade is inaccurate, the situation should be discussed with the faculty member. This will allow the faculty member to explain how the final grade was determined and, if an error is detected, to submit a change of grade.

If the student still thinks that the grade was assigned unfairly, a written appeal should be submitted to the department chair. Upon receipt of the written appeal, the department chair shall provide the student with a copy and explanation of the Grade Review Procedure and shall ensure that the requirements of the Grade Review Procedure are followed.

If the department chair is unable to resolve the complaint, then the dean of the school in which the course was offered will form a grade review committee as described in the Grade Review Procedure policy and will submit its decision to the dean of the school. The decision communicated by the dean of the school in which the program resides is the final decision and will be distributed to the student, faculty member(s) and department chair.

In cases concerning grades awarded for the fall semester, the written appeal must be submitted to the department chair no later than 30 calendar days after the beginning of the following spring semester. In cases concerning grades awarded for the spring semester or summer sessions, the written appeal must be submitted no later than 30 calendar days after the beginning of the following fall semester.

## Grading system

Work quality is measured by the four-point grade system with the following equivalents:

Grade symbol and meaning	Grade-point value per semester credit
A	4.0
B	3.0
C	2.0
D	1.0
F	0.0

P/F (Pass/Fail)	0.0
PR	0.0
S/U (Satisfactory/Unsatisfactory)	0.0

All other grades are temporary, carry no credit and are not used in the computation of a GPA. Refer to the following pages for an explanation of the use of the grades of satisfactory and unsatisfactory in relation to thesis/dissertation/research classes.

The number of grade points earned is computed by multiplying the grade-point value for the letter grade by the number of semester credits for the course. As an example, a student receiving an "A" (i.e., four grade points) in a three-credit course receives 12 grade points.

The grades of accepted transfer courses are not included in the computation of the VCU grade-point average. Graduate students are not designated as special honors graduates (i.e., cum laude, magna cum laude, summa cum laude) on transcripts or diplomas upon completion of their programs.

No graduate student shall be awarded degree credit for remedial work. Students advised to take any level course for remedial work should be notified in writing that the course credit shall not apply to the degree they are pursuing. Other bodies may rule later, should the student wish to apply the credit to some other degree.

## Grade of audit (AU)

Class size permitting, students may register for courses on an audit basis. A student may register for audit only during add/drop and late registration periods as a new registration and not as a change from credit to audit. Auditing a course means a student enrolls in a course, but does not receive academic credit upon completion of the course. A student who registers on an audit basis is subject to attendance regulations of that class and may be administratively withdrawn by an instructor for a violation of class requirements for audit students, before or after the normal eight-week withdrawal deadline. A student who registers for audit may be subject to other course requirements at the discretion of the instructor. Audit students are charged the regular rate of tuition and fees. An audit course is counted as part of the student's semester load in terms of classification as a full-time student. Courses taken for audit, however, do not satisfy minimum enrollment requirements for students receiving graduate teaching or research assistantships, graduate fellowships, or university graduate scholarships.

## Grade of continued (CO)

The grade of "CO" may be assigned as an interim grade for those courses which run over several grade reporting periods. The "CO" indicates that the course is not expected to be completed in a single semester and that students must reregister for the course. Upon completion of the course, a final grade will be assigned to the current semester, and the previous "CO" grade(s) will remain. This grade may be assigned only in courses approved for such grading.

## Grade of incomplete (I)

If because of circumstances beyond their control, students are unable to meet all the requirements of a course by the end of a semester, the mark of incomplete ("I") may be given. The awarding of a mark of "I" requires an understanding between instructor and student as to when and how the course will be completed. This understanding must be recorded on an Incomplete Grade Assignment Form which is submitted instead of a final course grade. The maximum time limit for submission of all course work necessary for removal of an incomplete is the end of the last day of classes of the next semester following the semester in which the incomplete was incurred (i.e., an incomplete awarded in the fall semester must be converted by the last day of classes in the spring semester, and an incomplete awarded in the spring or summer session must be converted by the last day of classes in the fall semester). At that time, an unremoved grade of incomplete is changed automatically to a failing grade. Individual departments and schools may have more stringent time limits. An extension of the time limit is possible, but must be approved, prior to the expiration date stated above, by the instructor and the dean of the school through which the course is offered. Written approval indicating the new time limit must be filed with the dean.

## Grade of pass (P)

This grade is awarded for certain courses to denote satisfactory completion of requirements. Courses assigned the grade of "P" will not be computed in the grade-point average.

## Grade of progress (PR)

The mark of "PR" may be assigned only in courses approved for such grading. Unlike the mark of "I," "PR" will not automatically be

changed to a failing grade at the end of the succeeding semester.

## Grades of satisfactory (S), unsatisfactory (U) or fail (F) in research, thesis and dissertation courses

All research, thesis, and dissertation credits taken as part of the final project (thesis/dissertation/project) for awarding a graduate degree are to be graded each semester as "S," "U" or "F." There is no limit to the number of these credits a student may take while pursuing completion of the degree as long as the student receives a grade of "S" for each credit. An individual department may terminate a student who does not progress satisfactorily as indicated by a "U" grade in research, thesis/dissertation/project course work. A student who receives a final grade of "F" in the thesis or dissertation will be terminated from the graduate program.

## Grade of withdrawn (W)

The grade of "W" indicates that the student has officially withdrawn from a course or has been dropped for nonattendance. No student who has officially withdrawn from a course or who has been dropped for nonattendance may attend subsequent meetings of the course.

## Course listings

### Identification of symbols

I	A course offered in the first semester
II	A course offered in the second semester
I, II	A course offered in each semester
I and II	A course continued through two semesters
S	A course offered in summer sessions

## Course interpretation

A single number listing for a course, such as MGMT 648, indicates that it is a one-semester course and may be offered each semester or only one semester each year.

Courses listed with a double number, such as THEA 603, 604 and designated as semester courses, consist of two one-semester courses, either semester of which may be taken without the other.

Courses listed with a double number, such as APPM 575-576, are designated as continuous courses and consist of two one-semester courses, the first of which can be taken without the second, but the second of which cannot be taken without the successful completion of the first.

The university reserves the right to withdraw any course or program.

## Course numbering

All schools and programs within VCU use the following course numbering system. All course numbers consist of three digits (XXX). The first digit relates to the course level as follows:

### 0XX Noncredit courses

Such courses are offered for students to make up deficiencies in previous training or to improve certain basic skills prior to full-time enrollment in undergraduate credit courses.

### 1XX and 2XX Undergraduate, lower level

Courses with these numbers are offered primarily for undergraduate students and may not be used for graduate credit, although graduate students may be required to register for courses at this level to gain a necessary foundation for other course work.

### 3XX and 4XX Undergraduate, upper level

Courses offered for advanced undergraduates and usually constitute the major portion of specific program work leading to the baccalaureate degree. On occasion, students will be advised by their graduate advisers to enroll in a 4XX course.

### 5XX Introductory graduate courses

Graduate students enroll for credit in these courses through the normal graduate advising system. Departments may limit the number of 500-level courses applicable to a graduate degree program. Advanced undergraduates may enroll in these courses for credit with consent of the offering department. Credit is applicable toward only one degree.

**First year, first professional (medicine and dentistry).** Courses normally open to students enrolled in the M.D. and D.D.S. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

### 6XX, 7XX, and 8XX Graduate courses

Graduate students enroll for credit in these courses through the normal graduate advising system.

**6XX Second year, first professional (medicine, dentistry, and pharmacy).** Courses normally open only to students enrolled in the M.D., D.D.S., and Pharm.D. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

**7XX Third and fourth year, first professional (medicine, dentistry, and pharmacy).** Courses normally open only to students enrolled in the M.D., D.D.S., and Pharm.D. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

## MCV Campus programs

Warning, probation and suspension are defined by the program of study. Consult program adviser for further details.

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## **VCU Life Sciences**

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VCU entered a new era when it implemented, as one of its highest priorities, a new university-wide matrix academic organization called VCU Life Sciences, created in response to the need to prepare students for the anticipated growth in new life sciences jobs in the coming decades. The skills identified for these jobs require highly interdisciplinary or multidisciplinary approaches, often falling between the boundaries of traditional academic disciplines. The way that the life sciences are understood and taught is likely to be fundamentally different, with increasing emphasis on systems biosciences as an important complement to more traditional, purely reductive approaches. The objective of Phase II of VCU's strategic plan specifically outlines the need to bring VCU's major academic and administrative divisions together to work on mutual initiatives that will accomplish VCU's goal of national leader-

ship. VCU Life Sciences is a response to that objective. These mutual initiatives will enhance the research and mentoring opportunities for faculty and students at the undergraduate, graduate and professional levels.

VCU Life Sciences is in the process of establishing new degree programs that directly address the need to prepare students for the exploding growth in careers in the life sciences. The solution will require highly interdisciplinary and multidisciplinary approaches, often falling between the boundaries of traditional academic disciplines. It will require increasing emphasis on systems biosciences as an important complement to more traditional, purely reductive approaches. VCU Life Sciences will offer degree programs that include bachelor's degrees, combined bachelor's-master's degrees, master's degrees and doctoral degrees. The establishment of these programs will create opportunities to combine professional programs with graduate curric-

ula. Refer to the School of Graduate Studies Web site at <http://www.vcu.edu/graduate> for updates on the proposed graduate degree programs.

For more information concerning proposed graduate programs, faculty and facilities, refer to the VCU Life Sciences chapter in the graduate section of this bulletin.

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## **Dietetic internship**

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A post-baccalaureate, accredited dietetic internship is offered through the VCU Health System's MCV Hospitals. Qualified applicants must have completed an undergraduate or graduate program in dietetics. For additional information contact the Dietetic Internship Director, MCV Hospitals, Virginia Commonwealth University Health System, P.O. Box 980294, Richmond, VA 23298-0294.

# School of Allied Health Professions

## Professional Program

The School of Allied Health Professions was established on Jan. 1, 1969, to provide an administrative structure for existing educational programs in allied health disciplines and to direct the development of new programs in response to the growing need for allied health manpower. At the outset, the school incorporated existing educational programs for hospital administration, medical technology, physical therapy and radiologic technology. A program for nurse anesthesia was inaugurated as a separate department in 1969; an existing educational program in occupational therapy was transferred administratively to the School of Allied Health Professions in 1970 and a teaching program in patient counseling formerly based within MCV Hospitals was integrated with the school, also in 1970. A doctor of philosophy program in health services, organization and research, the first doctoral program for the School of Allied Health Professions, was introduced in 1982. In 1985, the existing Department of Gerontology was transferred administratively to the School of Allied Health Professions. In June 1988, an executive master's program in health administration was introduced. An entry-level master's degree professional program in physical therapy was initiated for students matriculating in August 1989. On July 1, 1994 the Department of Rehabilitation Counseling was transferred from the School of Community and Public Affairs to the School of Allied Health Professions. A distance-learning, interdisciplinary doctoral program — the Ph.D. in Health Related Sciences — began accepting students in the fall 1998 semester. This program was developed in response to the national demand for doctorally prepared faculty and practitioners in the allied health professions. Recent program developments include the initiation of an entry-level masters degree program in occupational therapy and the subsequent closure of their undergraduate program (1998); the initiation of a Masters of Science degree offering in the Department of Patient Counseling (2000); the start of a joint degree program, the M.D./M.H.A., offered by the Department of Health Administration and the School

of Medicine (2001); and the initiation of a professional doctor of physical therapy degree (2002).

### Programs

Both entry- and advanced-level professional, graduate and certificate programs are offered by the School of Allied Health Professions. In addition to the professional doctor of physical therapy degree program described in this section, graduate and certificate degree offerings are available in clinical laboratory sciences, gerontology, health administration, health related sciences, nurse anesthesia, occupational therapy, patient counseling, physical therapy and rehabilitation counseling. Refer to the Graduate Programs section of this bulletin for additional information on these programs and their related courses.

### Philosophy

The faculty of the school is committed to offering, through the establishment and maintenance of rigorous standards of excellence, educational programs that will prepare students for professional careers in the allied health disciplines. Development of professional attitudes, emotional maturity and ethical behavior of students is a vital component of the educational process. It is essential that students gain a deep respect for the dignity of man and the inherent rights of patients and others who receive services. The programs are designed to include not only the development of skills to assure excellence in quality of health care, but also factual knowledge and experiences that will provide the basis for continuing intellectual and professional growth.

Community services of the school and faculty include continuing education, consultative resources and participation in all pertinent areas of health care. An integral part of these efforts is to stimulate and sponsor research activities in the allied health disciplines represented within the

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<http://views.vcu.edu/sahp>

#### Cecil B. Drain

Dean  
B.S.N., M.S., N.S., Ph.D.

#### Dolores G. Clement

Associate Dean  
B.A., M.A., M.S., Dr.P.H.

#### Debra A. Ropelewski

Assistant Dean for Fiscal Affairs  
B.S., M.B.A.

#### Jeffrey R. Lodge

Director of Information Systems  
B.A.

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school and to encourage interdisciplinary research.

### Facilities

Departments and programs in the School of Allied Health Professions presently are housed in the Randolph-Minor Annex, McGuire Hall, Lyons Building, VMI Building, MCV West Hospital, the William Grant House and the West Grace Street Housing Building.

### Licensure/certification

Graduates of most of the programs offered in the School of Allied Health Professions are required or eligible to take national/state certification or licensure

examinations. Requirements of licensing and certifying agencies vary. Some licensure and certification agencies consider individuals convicted of a felony ineligible for licensure or certification. For information, prospective students should contact the licensure or certification agency for the specific allied health discipline.

## Accreditation

The School of Allied Health Professions is an institutional member of the American Society of Allied Health Professions and the Virginia Association of Allied Health Professions. All of its programs are approved or accredited by the appropriate national professional or educational organizations.

## Attendance regulations

The faculty considers attendance at lectures, laboratories and other functions a requisite to the successful acquisition of the knowledge and skills required of the professional. Hence, the faculty cannot condone absence without good reason from any regularly scheduled educational experience. At the beginning of each course, instructors relate to their classes the policy of the department concerning the attendance regulations for that semester. The nature of make-up work in the event of absence will be the prerogative of the instructor.

## Student performance and behavior

The goals and objectives of the School of Allied Health Professions and its component departments and programs relate to the education of persons preparing for professional careers in the allied health disciplines. An integral requisite of students and practitioners is an undeviating acceptance of a professional attitude and pride that will motivate them to adhere to a code of professional ethics and to develop fully their competencies for practice.

The suitability of student performance and behavior relating to these professions and to the consumers of health care is a paramount concern of the administration and faculty of this school. To assure a quality of educational and clinical preparation for its graduates, the following statement is promulgated:

If, in the judgment of the faculty/administration of the School of Allied

Health Professions, a student is not considered suitable for emotional, professional or related reasons, the student's academic status may be appropriately altered.

If any questions arise regarding the standards of performance or behavior, it is the responsibility of students to apprise themselves of acceptable character and conduct requirements prior to matriculation in the designated department or program.

## Department of Physical Therapy

- Arena, Ross, Assistant Professor  
Ph.D., P.T. Virginia Commonwealth University  
Exercise physiology/cardiopulmonary.
- Donegan-Shoaf, Lisa, Assistant Professor  
Ph.D., P.T. Virginia Commonwealth University  
Clinical education.
- Edge, Annabel, Assistant Professor  
M.S., P.T. Virginia Commonwealth University  
Clinical sciences.
- Finucane, Sheryl D. G., Assistant Professor  
Ph.D., P.T. Virginia Commonwealth University  
Neuroanatomy/histology.
- Ford-Smith, Cheryl, Assistant Professor  
M.S., P.T. Virginia Commonwealth University  
Clinical sciences.
- Goldberg, Stephen J., Professor (Anatomy)\*  
Ph.D. Clark University  
Cranial nerve motor unit physiology.
- Hirt, Susanne, Professor Emerita  
M.Ed., P.T. University of Wisconsin  
Neuroanatomy/gross anatomy.
- Jewell, Dianne, Assistant Professor  
Ph.D., P.T. Boston University  
Health organization and research.
- Lamb, Robert, Professor Emeritus  
Ph.D., P.T. University of Maryland  
Biomechanics.
- Mayhew, Thomas, Associate Professor and Department Chair  
Ph.D., P.T. Medical College of Virginia of Virginia Commonwealth University  
Anatomy.
- McClung, J. Ross, Professor (Anatomy)\*  
Ph.D. University of Texas at Galveston  
Neurobiology.
- Michener, Lori, Assistant Professor  
Ph.D., P.T., S.C.S., M.C.P. Hahnemann University  
Orthopedics.
- Payton, Otto, Professor Emeritus  
Ph.D., P.T. University of Maryland  
Education.
- Pidcoe, Peter, Assistant Professor  
Ph.D., P.T. University of Illinois at Chicago  
Bioengineering.
- Riddle, Daniel, Professor  
Ph.D., P.T. Virginia Commonwealth University  
Orthopedic physical therapy.

- Snyder-Shall, Mary, Associate Professor  
Ph.D., P.T. Virginia Commonwealth University  
Neurophysiology.
- Wheeler, Emma, Assistant Professor  
M.S., P.T. Virginia Commonwealth University  
Clinical sciences/clinical education.

\* Department in parenthesis indicates primary appointment.

## History

The Department of Physical Therapy was established in 1945 to provide basic preparation for the practice of physical therapy. Between 1945 and 1954, the program consisted of a 12-month professional course designed to train students for entry into the profession. This program was based upon at least three years of college work or the possession of a registered nurse certificate. A two-year professional program after two years of preparatory college work was initiated in 1954. This program led to the degree of Bachelor of Science in Physical Therapy. In 1968, the Department of Physical Therapy became part of the School of Allied Health Professions. The two-year professional program leading to the bachelor of science degree continued through the 1988-89 academic year.

In August 1989, the Department of Physical Therapy, School of Allied Health Professions, began a three-year professional program based on three years of previous college work. that lead to a master of science degree. On Feb. 8, 2001 the VCU Board of Visitors approved a proposal to offer a Doctor of Physical Therapy as the entry-level professional degree. The State Council of Higher Education in Virginia gave its final approval for the proposal on June 20, 2001. The first class to study the professional program began in July of 2002.

In 1946, an advanced graduate program offering the master of science degree to physical therapists was established and continued to function until 1952 when it was discontinued. The program was reinstated in 1968 and expanded when a full-time director of graduate studies was appointed in 1971. The current advanced master's degree program offers the opportunity for practicing physical therapists to expand their knowledge and skills in the basic and clinical sciences. In the early 1980s, the departments of Anatomy, Physiology and Physical Therapy began offering a Ph.D. program for the purpose of developing physical therapy faculty.



## Mission

The Department of Physical Therapy serves the people of the commonwealth of Virginia and the nation by providing educational programs related to physical therapy. The department provides an environment that encourages education through problem solving, free inquiry, professional behavior and scholarship. The department's primary focus is to prepare individuals for general physical therapy practice. These practitioners are educated to serve as an entry point into the health care system for consumers. Post-professional programs provide quality education leading to careers in teaching and research. The department also provides assistance and services to the community and engages in research and scholarly activities related to the practice of physical therapy.

## Philosophy

Physical therapy is an integral part of the health care system. Expanding knowledge in the basic and clinical sciences, and changes in the needs and mandates of society, continually place new demands on the physical therapy profession. The faculty of the Department of Physical Therapy is committed to providing educational programs responsive to expanding knowledge and the needs of society.

The primary principle directing the activities of the department is the faculty's commitment to optimal patient care through physical therapy education, research and practice. The faculty strongly believes that physical therapists must have a thorough understanding of the theoretical bases for treatment and skills in problem solving, evaluation and communication. The faculty also believes that physical therapists have a responsibility to develop skills for lifelong learning (e.g., the ability to find information and to critically analyze that information).

The faculty also is committed to the development and sharing of new knowledge in the field of physical therapy through scholarship and research.

## Objectives

The objectives of the Department of Physical Therapy, in concert with the mission of the university and the School of Allied Health Professions, are to:

- provide an entry-level post-baccalaureate educational program for full-time students with diverse backgrounds and experiences,

- contribute to interdisciplinary post-professional doctoral programs which prepare physical therapists to contribute to the understanding and application of therapeutic procedures through basic and applied research and to teach both clinical and didactic physical therapy on all academic levels,
- provide an atmosphere which fosters critical thinking, intellectual curiosity and integrity, freedom of expression, personal growth and professional competence, and a commitment to learning for faculty and students,
- provide an environment which facilitates research and scholarship directed toward optimizing patient care, and
- provide services to the public and professional communities.

## Facilities

The Department of Physical Therapy's educational facilities are located on the basement floor of A.D. Williams/West Hospital. These buildings, located on the northeast corner of 12th and Broad streets, house administrative and faculty offices, classrooms, physical therapy instructional, computer, and research laboratories, and student locker rooms. Class-rooms in other buildings on the MCV Campus are used as needed.

Clinical education experiences for professional students are offered in physical therapy clinics throughout Virginia and the country.

## Professional Physical Therapy Program

The goal of this program is to provide a quality educational program that prepares students for entry into the profession of physical therapy. The program prepares students to evaluate and manage patients with physical therapy problems effectively and in accordance with ethical principles. The program also provides students with strategies to continually define and meet their own educational needs in order to keep skills and knowledge current throughout their professional careers. Upon completion of the program students are awarded a doctor of physical therapy degree.

## Objectives

Satisfactory performance in the educational experiences provided in the Doctor

of Physical Therapy Program prepares the graduate to:

- within the scope of physical therapy practice, effectively examine, evaluate, diagnose and determine the prognosis of individuals with impairments, functional limitations and disabilities.
- within the domain of physical therapy practice, apply health promotion principles and practices in primary, secondary and tertiary prevention.
- manage physical therapy problems in a safe, ethical, legal and professional manner.
- use appropriate educational principles to design methods to teach patients/clients, caregivers, colleagues and other health care professionals.
- effectively manage changes in the physical function and health status of patients/clients.
- collaborate with other health care practitioners to achieve the optimum delivery of health care.
- select and implement safe and effective physical therapy interventions and assess the subsequent outcomes.
- determine the need for further examination or consultation by another physical therapist or for referral to another health care professional.
- manage human and material resources and services to provide high quality and cost effective physical therapy services in diverse settings.
- apply concepts and principles of management to effectively supervise support personnel to whom tasks have been delegated.
- effectively document patient information and physical therapy services to colleagues in an organized, logical and concise manner.
- integrate basic principles of critical inquiry to evaluate, interpret and utilize professional literature in clinical practice, participate in clinical research activities and critically analyze new concepts in the application of physical therapy practice.
- effectively communicate, verbally and non-verbally, with patients and their caregivers, health care personnel and members of the community.
- demonstrate an awareness of the influence of social, economic, legislative and demographic factors of the delivery of health care.
- demonstrate an understanding of the importance of lifelong learning and a

commitment to the physical therapy profession.

### Accreditation

The Professional Physical Therapy Program is accredited by the Commission on Accreditation in Physical Therapy Education, American Physical Therapy Association.

### Academic admission requirements for the Doctor of Physical Therapy Program

Prerequisites for admission to the Professional Doctor of Physical Therapy Program include a bachelor of arts or science degree from an accredited college or university. A grade of "D" in any required prerequisite course is not acceptable. A minimum GPA of 2.7 (in a 4.0 system) is required to be considered for admission. The GRE is required; the scores should be reported directly to Virginia Commonwealth University. For non-native English-speaking applicants, regardless of immigration status, a Test of English as a Foreign Language (TOEFL) score of at least 600 (score of 250 on computerized exam); scores should be reported directly to Virginia Commonwealth University. The program of study necessary to be considered for admission to the Professional Doctor of Physical Therapy Program must include a minimum of the following subject areas:

- English. Six semester hours. Advanced placement or CLEP credits may not be substituted. Courses in literature and one course in composition or scientific writing are strongly recommended.
- Biological sciences. 12 semester hours including laboratory experience. Must include one course in human physiology; an exercise physiology course is not an acceptable substitute for a human physiology course. May include general biology or general zoology. No more than four credits in botany may be applied to meet this requirement. Advanced placement or CLEP credits may not be used to meet these prerequisites.
- Chemistry. Eight semester hours of general chemistry with laboratory. CLEP credits may be used to meet these prerequisites.
- Physics. Eight semester hours of general physics with laboratory experiences. Courses that emphasize

mechanics, electricity, heat and light are highly recommended. CLEP credits may be used to meet these prerequisites.

- Mathematics. Three semester hours. These credits must be in trigonometry, calculus or equivalent. Advanced placement or CLEP credits may be used to meet these prerequisites.
- Statistics. Three semester hours.
- Psychology. Six semester hours. One course in abnormal psychology and one course in human growth and development are required. Advanced placement or CLEP credits may be used to meet these prerequisites.
- Social sciences. Six semester hours in social sciences such as sociology, economics, anthropology, history, etc. Advanced placement or CLEP credits may be used to meet these prerequisites.
- Humanities. Three semester hours. A course in speech/public speaking and a course in philosophy (ethics is recommended) are required.

At least eight hours of electives must be upper-level courses. In order to complete the social science, psychology and humanities requirements, students are encouraged to choose courses from the following categories: personality development, psychology of adjustment, sociology, anthropology, economics, history, philosophy or logic, counseling, human relations and public speaking.

In order to complete the total requirements, students are encouraged to elect courses from the following categories: computer science, embryology, histology, cell biology, comparative anatomy, kinesiology, exercise physiology, foreign languages and courses in physical education dealing with an analytical approach to human movement or motor learning.

Students are required to have current CPR certification. One of the three required letters of recommendation should be from a physical therapist.

### Application deadlines

All applicants to the program are encouraged to submit a completed application as soon as possible beginning Nov. 1, 2003. Acceptance decisions will begin Nov. 15, 2003. The final deadline for applications is Feb. 1, 2004. All acceptance decisions will be made by April 1, 2004.

### Curriculum plan for the Professional Doctor of Physical Therapy Program

First professional year	credits
Summer semester one	
PHTY 501 Gross Anatomy	7
Fall Semester	
PHTY 502 Kinesiology	4
PHTY 512 Professional Aspects of Physical Therapy	2
PHTY 505 Applied Microscopic Anatomy for Physical Therapists	4
PHTY 510 Rehabilitation I	3
PHTY 531 Scientific Inquiry	3
Total credits	16
Spring semester	
PHTY 506 Functional Neuroanatomy	5
PHTY 537 Rehabilitation II	3
PHTY 503 Applied Exercise Physiology	3
PHTY 508 Measurement and Assessment	6
Total credits	17
Summer semester two	
PHTY 520 Clinical Education I	4
Second professional year	
Fall semester	
PHTY 626 Life Span Development and Motor Control I	6
PHTY 648 Orthopedic Physical Therapy	5
PHTY 609 Clinical Biomechanics	3
PHTY 621 Therapeutic Agents	5
PHTY 624 Physical Therapy Seminar I	1
Total credits	20
Spring semester	
PHTY 627 Life Span Development and Motor Control II	2
PHTY 640 Neurological Physical Therapy	6
PHTY 644 Orthotics and Prosthetics	2
PHTY 623 Cardiopulmonary Physical Therapy	3
PHTY 646 Clinical Medicine	2
PHTY 615 Pharmacology	1
Total credits	16
Summer semester three	
PHTY 650 Clinical Education II	8
Third professional year	
Fall semester (block 1 – 8 weeks)	
PHTY 660 Topics in Health Care Services and Delivery	1
PHTY 661 Administration and Management	2
PHTY 654 PT Seminar II	1
PHTY 670 Clinical Integration	2
PHTY 651 Professional Issues	2
PHTY 691 Special Topics (electives)	1
Total credits	9

Fall semester (block 2 – 12 week clinical internship)	
PHTY 680 Clinical Education III	8-12
Spring semester	
PHTY 680 Clinical Education IV (12 week clinical internship)	12-16
PHTY 674 PT Seminar III	1

Note: The preceding curriculum plan is under continuous review by the faculty. Course content, sequencing and time commitments are subject to change.

## Professional courses in physical therapy (PHTY)

### PHTY 501 Gross Anatomy (Physical Therapy)

Semester course; 4 lecture and 6 laboratory hours. 7 credits. Examines the structural and functional anatomy of the human musculoskeletal system through lecture and cadaver dissection. Develops understanding of fundamental facts and principles that apply to professional practice through lecture, dissection, radiographic examination and clinical correlation.

### PHTY 502 Kinesiology

3 lecture and 1 laboratory hour. 4 credits. Introduces the student to the kinematics and kinetics of human movement. Emphasis is placed on osteokinematics, arthrokinematics and the structures that limit and/or guide movement.

### PHTY 503 Applied Exercise Physiology

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Integrates principles and practices of applied physiology, exercise and health promotion in primary, secondary and tertiary prevention of impairments, functional limitations, disabilities or changes in physical function and health status. Emphasizes assessment and therapeutic exercise principles and associated underlying physiology.

### PHTY 505 Applied Microscopic Anatomy for Physical Therapy

Semester course; 3 lecture hours. 4 credits. Examines the basic components of cells in terms of their structure and function. Cells and tissues of greatest importance to physical therapists are studied in detail, and their response to injury is explored. Reviews methods of studying cells.

### PHTY 506 Functional Neuroanatomy

Semester course; 5 lecture hours. 5 credits. Examines the basic structure and function of the nervous system with special emphasis on topics of greatest concern to physical therapists. Uses neurobiological approach to integrate the basic health sciences of neuroanatomy, neurophysiology and clinical neuroscience.

### PHTY 508 Measurement and Assessment

Semester course; 3 lecture and 3 laboratory hours. 6 credits. Teaches some of the basic evaluation methods and measurement procedures used by physical therapists in history taking and physical examination. Includes lecture, demonstration and practice in measurement of the length and girth body parts, manual and mechanical muscle testing, joint range of motion, accessory motion testing and palpation.

### PHTY 510 Rehabilitation I

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduces basic clinical skills and procedures, including measurement of vital signs, patient lifting and moving techniques, progressive mobilization, medical asepsis and principles of bandaging. Introduces record keeping and professional communication.

### PHTY 512 Professional Aspects of Physical Therapy

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Introduces communication methods and skills appropriate for interaction with patients, families and colleagues. Provides introduction to sociocultural, psychological, professional and ethical issues that impact patient management as well as professional communication. Emphasizes professional demeanor and presentation as identified by the generic abilities.

### PHTY 520 Clinical Education I

Semester course; 160 clock hours. 4 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Four-week, full-time clinical experience. Introduces physical therapy practice and allows students to develop interpersonal skills with patients, peers and other health professionals. Develops beginning skills in patient handling, physical therapy evaluation and treatment procedures. Explores various aspects of physical therapy, including its role in comprehensive health care delivery. Applies and integrates course material from the first professional year of education.

### PHTY 531 Scientific Inquiry

Semester course; 3 lecture hours. 3 credits. Covers concepts and principles of the research process including question, theory and hypothesis development, research design and methodology, and statistical reasoning and analysis. Emphasizes critical review of professional literature and determination of the relevance and applicability of research findings to specific patients with the goal of promoting evidence-based practice.

### PHTY 537 Rehabilitation II

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Presents evaluation and treatment methodology for the acute care patient. Focuses on the rehabilitation phase of patient care and emphasizes the spinal cord injured patient. Laboratories include wound care, mat mobility, wheelchair mobility, patient transfers and gait training. Clinic visits expose students to patient evaluations and patient care in the acute and rehabilitation settings.

### PHTY 609 Clinical Biomechanics

Semester course; 3 lecture hours. 3 credits. Provides an opportunity to develop knowledge in sufficient depth to understand how selected biomechanical factors influence normal and pathologic human form and movement. Stresses validity and reliability of methods of evaluating musculoskeletal form and function.

### PHTY 615 Pharmacology (Physical Therapy)

Semester course; 1 lecture hour. 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Series of lectures on the integrated approach to the study of human disease and pharmacotherapeutics. Covers the pharmacological management of common disease states affecting physical function.

Emphasizes the utilization of subjective and objective patient data for the assessment, monitoring and optimization of pharmacotherapy.

### PHTY 621 Therapeutic Agents

Semester course; 4 lecture and 2 laboratory hours. 5 credits. Examines the theoretical bases for and therapeutic application of thermal, mechanical and electrical agents. Emphasizes the physical and physiological effects, indications and contraindications for electrical current, diathermy, superficial heat and cold, massage, ultraviolet, traction, ultrasound, laser and compression therapy. Analyzes relative current scientific literature and uses laboratories for practice and clinical problem solving.

### PHTY 623 Cardiopulmonary Physical Therapy

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Applies principles of pathophysiology of the cardiovascular and respiratory systems; includes physical therapy assessment and treatment of patients with cardiac and respiratory disorders.

### PHTY 624 Physical Therapy Seminar I

Semester course; 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Provides students the opportunity to review, integrate and develop strategies at the novice level using previously presented material and research. Provides opportunity to develop skill in oral presentation of clinical case reports.

### PHTY 626 Life Span Development and Motor Control I

Semester course; 4.5 lecture and 3 laboratory hours. 6 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Covers models of neurologic dysfunction, family-centered care, interdisciplinary teamwork and neurophysiological principles of physical therapy. Includes units on motor control and learning, motor development and pediatric assessment from birth to early adulthood.

### PHTY 627 Life Span Development and Motor Control II

Semester course; 2 lecture hours. 2 credits. Discusses age related changes in physical structure, motor control and psychosocial/cognitive issues in humans from middle adulthood to the end of life. Emphasizes the geriatric population and the physical therapy management of problems with the integumentary system. Highlights the role of the physical therapist in making program modifications based on age related changes.

### PHTY 640 Neurologic Physical Therapy

Semester course; 4 lecture and 4 laboratory hours. 6 credits. Prerequisites: PHTY 535 and 539. Applies principles of motor development, control and learning to the evaluation and remediation of motor disorders. Critically surveys current theory and practice of neuro-motor therapeutics.

### PHTY 644 Orthotics and Prosthetics

Semester course; 2 lecture hours. 2 credits. Prepares the student to participate as a member of the professional prosthetic or orthotic clinic team, integrates material from other courses, and teaches basic skills in orthotic and prosthetic assessment, prescription, and training and performing initial and final prosthetic and orthotic checkouts.

**PHTY 646 Clinical Medicine**

Semester course; 2 lecture hours. 2 credits. Comprehensive course in clinical medicine and sciences relevant to the practice of physical therapy. Medical practitioners from the MCV Campus and surrounding areas participate. Topics include psychiatry, pharmacology, hematology, oncology, dermatology, dentistry, rheumatology, neurology and burn therapy.

**PHTY 648 Orthopaedic Physical Therapy**

Semester course; 4 lecture and 2 laboratory hours. 5 credits. Examines principles and techniques used by physical therapists for the treatment of patients with orthopaedic disorders. Uses scientific evidence and theoretical rationale in a problem-solving approach to develop treatment plans for patients with orthopaedic musculoskeletal disorders.

**PHTY 650 Clinical Education II**

Semester course; 320 clock hours. 8 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Eight-week, full-time clinical experience designed to develop competency in physical therapy evaluation and treatment. Teaches the use of sound scientific rationale and problem solving skills in aspects of patient care. Promotes the development of an independent professional through synthesis and utilization of advanced academic theory in evaluation and treatment. Encourages the exploration of interest areas in a variety of practice settings.

**PHTY 651 Professional Issues in Physical Therapy**

Semester course; 2 lecture hours. 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Discusses professional issues facing the modern physical therapy practitioner, including ethical decision making, state and national current physical therapy issues, and legislative efforts. Provides opportunity for advancing skills in educational techniques, assertiveness skills, conflict resolution, as well as preparation for employment via resume and portfolio writing and interview skills.

**PHTY 654 Physical Therapy Seminar II**

Semester course; 18 clock hours. 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Provides the opportunity to review, integrate and develop strategies using previously presented material and research to present an oral case study of a patient or patients from the clinical experience in the previous summer.

**PHTY 660 Topics in Health Care Services and Delivery**

Semester course; 2 lecture hours per week for eight weeks. 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Provides an overview of issues in health care related to access, utilization, organization and financing of services, as well as general overview of the interrelationship among health care consumers, providers, organizations, regulators and third party payers. Discusses implications for public policy and legislative action. Uses critical review of literature and case studies to illustrate key concepts and their relevance to the practice of physical therapy.

**PHTY 661 Administration and Management in Physical Therapy**

Semester course; 2 lecture hours. 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Provides students with a basic understanding of operational issues related to physical therapy practice in a variety of settings. Topics include leadership, operational and business success measures, reimbursement, quality assurance, performance improvement, utilization review, risk management, documentation and marketing. Skill sets include, at an introductory level, supervision, delegation, hiring practices, budget development and analysis, peer review, outcomes measurement, and ethical decision making.

**PHTY 670 Clinical Integration of Physical Therapy Concepts**

Semester course; 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Uses case studies in a problem-based learning approach, which will allow students to integrate knowledge about patient evaluation and assessment with treatment design, implementation, and progression. Utilizes current literature to support treatment interventions. Includes topic areas: pediatrics, orthopaedics, neurology, oncology, cardiac rehabilitation, integumentary systems and acute care/ICU.

**PHTY 674 Physical Therapy Seminar III**

Semester course; 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Integrates material from DPT courses with clinical research. Provides experience in writing individual case reports dealing in depth with the history, current status and problems in a given area of clinical specialization.

**PHTY 680 Clinical Education III**

Semester course; 320 to 640 clock hours. 8-16 credits. May be repeated for a total of 24 credits. Eight- to 12-week, full-time clinical experience designed to develop entry-level competency in physical therapy evaluation and treatment in the clinical setting. Includes the use of sound scientific rationale and problem solving skills in all aspects of patient care. Promotes the development of an independent professional through synthesis and utilization of advanced academic theory in evaluation and treatment.

**PHTY 691 Special Topics in Physical Therapy**

1-4 credits. Guided independent study of specific topics not discussed in courses or discussed in less detail in courses. Student's desired topic of study must be identified and approved prior to enrollment.

# School of Dentistry

## Professional Programs

The School of Dentistry was created in 1893 when the University College of Medicine opened with a dental department as one of its original divisions. The Medical College of Virginia inaugurated a dental education program in 1897, and in 1913 the two schools were merged to form the MCV School of Dentistry.

In 1968, by an act of the Virginia General Assembly, MCV was merged with Richmond Professional Institute to form Virginia Commonwealth University. The School of Dentistry is located on VCU's MCV Campus.

The facilities of the School of Dentistry are housed in the Wood Memorial and Lyons buildings and contain clinical facilities, research facilities, classrooms, student laboratories, departmental offices and a computer-learning laboratory.

The school provides opportunities for selected, qualified individuals to study dentistry under the most favorable conditions and in accordance with the standards established by the Commission on Dental Accreditation of the American Dental Association.

The degree of doctor of dental surgery (D.D.S.) is awarded to graduates of the school's four-year professional program and the bachelor of science degree to graduates of the Division of Dental Hygiene.

Graduates of the advanced dental education programs in endodontics, orthodontics, pediatric dentistry, periodontics and orthodontics are awarded the master of science degree.

### Mission

The VCU School of Dentistry is a public, urban, research dental school, supported by Virginia to serve the people of the commonwealth and the nation. The school's mission is to provide educational programs that prepare graduates who are competent to provide dental care services, generate new knowledge through research and other scholarly activity, and provide quality oral health care to the public and service to the community.

### Philips Institute of Oral and Craniofacial Molecular Biology

#### Francis L. Macrina

Director, The Philips Institute, and Edward Myers  
Professor of Oral and Craniofacial Molecular  
Biology and Microbiology and Immunology (1974)  
B.S. 1968 Cornell University  
Ph.D. 1972 Syracuse University

520 N. 12th St. • P.O. Box 980566  
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#### Ronald J. Hunt

Harry Lyons Professor and Dean (1998)  
D.D.S. 1973 University of Iowa  
M.S. 1982 University of Iowa

#### Carolyn Booker

Assistant Dean for Students (1999)  
B.S. 1976 South Carolina State University  
M.A. 1977 South Carolina State University  
Ph.D. 1987 Southern Illinois University

#### Betsy A. Hagan

Associate Professor of General Practice and  
Associate Dean for Clinics (1980)  
B.S. 1974 Virginia Polytechnic Institute and  
State University  
D.D.S. 1978 Virginia Commonwealth University  
M.B.A. 1984 Virginia Commonwealth University

#### James E. Hardigan

Associate Professor and Associate Dean for  
Administration (1975)  
B.S. 1968 Northeastern University  
M.B.A. 1970 Northeastern University  
Ph.D. 1975 Cornell University

#### David C. Sarrett

Professor of General Practice and Assistant  
Dean for Academic Affairs (1992)  
D.M.D. 1977 University of Florida  
M.S. 1988 University of Florida

#### Harvey A. Schenkein

Paul Tucker Goad Professor of Periodontics and  
Microbiology and Immunology and Assistant  
Dean for Research (1978)  
B.A. 1970 State University of New York  
D.D.S. 1974 State University of New York  
Ph.D. 1978 State University of New York

Califano, Joseph V. (1991) Associate Professor of  
Periodontics, Oral and Craniofacial Molecular  
Biology, and Microbiology and Immunology, and  
Member Scientist, the Philips Institute  
B.A. 1979 Hofstra University  
D.D.S. 1984 Virginia Commonwealth University  
Ph.D. 1990 Virginia Commonwealth University

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- Kitten, Todd O. (1997) Assistant Professor of Oral and Craniofacial Molecular Biology, and Microbiology and Immunology, and Member Scientist, the Philips Institute  
B.A. 1968 The University of Dallas  
Ph.D. 1992 The University of Texas Health Science Center
- Lewis, Janina P. (2002) Assistant Professor of Oral and Craniofacial Molecular Biology, and Member Scientist, the Philips Institute  
M.S. 1990 Uniwersytet Gdanski  
Ph.D. 1997 Virginia Commonwealth University
- Rogers, Jeffrey D. (1999) Assistant Professor of Periodontics, Oral and Craniofacial Molecular Biology, and Microbiology and Immunology, and Member Scientist, the Philips Institute  
B.S. 1990 University of Utah  
D.D.S. 1993 Virginia Commonwealth University School of Dentistry  
Ph.D. 2000 State University of New York at Buffalo
- Shiang, Rita (1997) Assistant Professor of Human Genetics and Member Scientist, the Philips Institute  
B.S. 1984 University of California at Los Angeles  
Ph.D. 1990 University of Iowa
- Yeudall, Andrew (2002) Associate Professor of Oral and Craniofacial Molecular Biology, and Member Scientist, the Philips Institute  
B.Sc. Biochemistry, University of Glasgow, Scotland  
B.D.S. Dentistry, University of Glasgow, Scotland  
Ph.D. Molecular Biology, University of Glasgow, Scotland

The mission of the Philips Institute of Oral and Craniofacial Molecular Biology is to serve the university and the commonwealth of Virginia as a center of educational and research excellence focused on infectious, neoplastic and genetic diseases of the oral cavity, head and neck.

## Admission requirements

A minimum of 90 semester hours (or equivalent) in an accredited college or university is required and must be documented. Most acceptances have a bachelor's degree and/or four years of college. Required courses are general biology, general chemistry, organic chemistry, physics and English. Laboratory experiences are required for those courses where applicable. Biology courses should emphasize zoology rather than botany. Courses in biochemistry, general microbiology or bacteriology, animal physiology, immunology, histology, genetics, embryology, the behavioral sciences, and courses involving psychomotor skills are strongly recommended. Academic credits presented by an applicant must be acceptable for credit toward a degree in the institution in which the courses are taken. Individuals interested in pursuing a career

in dentistry should schedule an appointment in the Office of Admissions for individual guidance.

In order to successfully complete the dental curriculum at VCU, students must meet non-academic criteria for motor, sensory and observation, communication, cognitive and behavioral abilities in the document Technical Standards for Dental Education Programs for VCU School of Dentistry. Accordingly, applicants may be required to prove their proficiency in American English via standardized tests and interviews. An applicant may consider the option of postponing matriculation until such time that he/she can meet these requirements.

Participation in the Dental Admission Test (DAT) of the American Dental Association is required. It is recommended that this test be taken the year before the intended matriculation year. Applicants are encouraged to take the examination more than one time, and the best set of scores is used as the official set. Information about the Dental Aptitude Test can be obtained from: a) your pre-health advising office of your undergraduate school, b) VCU, School of Dentistry Office of Admissions, or c) the American Dental Association, Department of Testing Web site: <http://www.ada.org/prof/ed/testing>.

## Selection factors

VCU is a state-supported, public university and gives admission preference to state residents. All applicants are evaluated by uniform criteria without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation or disability.

Students are accepted by the Admissions Committee on the basis of excellence of predental education, DAT scores, recommendations, experiences in dentistry and results of personal interviews with members of the committee. The interview process is standardized and designed to determine motivation, knowledge of and interest in the dental profession, and to afford the applicant an opportunity to provide additional information pertaining to his/her application. Selection occurs on a rolling admissions basis, and once the class is complete, an alternate list is created. Members of minority groups underrepresented in dentistry are especially encouraged to apply. Each year a certain number of students who are not accepted into the freshman class are invited to take selected courses with this

class. Their performance in these courses plays a vital role in their being considered for the following year's admissions process.

## Application procedures

The School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). All applicants are required to submit credentials through this service. Re-applicants must also reapply through the application service. Application forms can be obtained from AADSAS, 1625 Massachusetts Ave. N.W., Suite 101, Washington, D.C. 20036 (e-mail to [aadsas.appl@adea.org](mailto:aadsas.appl@adea.org) or call 202-667-1887), predental advisers in colleges and universities, and the Office of Admissions, School of Dentistry, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566.

Application to the School of Dentistry can be made through AADSAS on or after May 1 and must be received by AADSAS no later than Nov. 1 of the year preceding intended matriculation.

AADSAS compiles academic records and other pertinent information and forwards these with the application to the School of Dentistry. Qualified applicants are then requested to submit supplemental information, such as the VCU supplemental application. The application fee is \$70.

Applicants will be notified of decisions according to guidelines established by the American Association of Dental Schools. The first acceptances are sent out on Dec. 1, and a \$200 deposit (credited to tuition) is required by Jan. 15. After Feb. 1, the deposit must be received within two weeks following notification of acceptance. A second deposit of \$100 credited to tuition is due on May 1. Both deposits are nonrefundable.

A letter of acceptance offers the candidate a position in the class entering for the session cited. Receipt by the Office of Admissions of the initial \$200 nonrefundable tuition deposit within the prescribed period reserves the position in the class. Failure to reserve a position results in that position being offered to another candidate. The second \$100 nonrefundable tuition deposit initiates active administrative processing of matriculation into the first-year class. Failure to send this deposit results in loss of position, and the position is then offered to another candidate. The act of matriculation also implies a willingness on the part of the student to comply with uni-

versity rules and regulations, to take an interest in maintaining the ideals of the institution, and to conduct himself/herself in a manner befitting a member of the dental profession.

## Admission with advanced standing

The School of Dentistry will consider applicants for admission with advanced standing on an individual basis depending upon positions available and qualifications of the applicant. Pre-admission evaluation of skills and knowledge by performance testing is required prior to admission consideration.

## Financial assistance

A general description of financial aid based on demonstrated need is contained in the Professional Studies at VCU chapter of this bulletin. Financial need-based aid programs available to dental students include Health Professions Student Loans, Loans for Disadvantaged Students, Virginia Rural Dental Scholarship Program, and federal educational loans. Further information may be obtained from the Office of Admissions, Financial Aid and Student Affairs of the School of Dentistry.

## Honors and awards

The School of Dentistry presents numerous awards, honors and scholarships to students during the academic year. These awards are presented during special school events, including graduation, Student Clinic Day and the Senior Gala. Students who excel in scholarship and leadership may also be eligible for membership in university or school honor societies. In addition, students who meet established criteria may be eligible for scholarships or election to membership in organizations related to dentistry.

**Omicron Kappa Upsilon** is the national honorary dental society. Each year the society selects those students who, in addition to scholarship, have demonstrated exemplary traits of character and potential qualities of future professional growth and attainments.

**Phi Kappa Phi** is a national honor society which recognizes and encourages superior scholarship. It accepts members from applied and professional fields of study, as

well as from letters, arts, sciences and humanities. The VCU chapter was installed in 1977.

**Alpha Omega Scholarship Award** is presented to the graduating student who has attained the highest scholastic rating for his/her four years of dental study.

**Harry Lyons Scholarship Award** is awarded to the graduating senior dental student who has attained the highest grade-point average for his/her four years of dental school.

**A. D. Williams Foundation Award** is an annual stipend made to a student in each class who demonstrates, by virtue of high scholastic attainment and professional performance, unusual promise and ability. Character, motivation, intellectual curiosity and realization of the opportunities for intellectual development will be considered in the award, which is made at the end of the academic year.

**O. M. Clough Award** is awarded to a graduating senior dental student for outstanding achievement in restorative dentistry.

**William B. Fitzhugh Scholarship Award** is awarded to an incoming dental student who has demonstrated financial need, preference being given to students who have demonstrated athletic abilities at their undergraduate institution.

**R. Ashton Gay and Henry F. Vaughan Scholarship** is awarded to a student who is a Virginia resident at the VCU School of Dentistry, demonstrates academic excellence and leadership during the D-1 year, and has demonstrable need of financial assistance at the beginning of the D-2 year.

**Edmond T. Glenn Award** is awarded on the basis of financial need to a student ranked in the upper half of the class at the end of the D-3 year and who has been involved in school/class activities.

**International College of Dentists Award** is presented to the graduating dental student who has shown the most professional growth and development during his/her years of dental study.

**Pierre Fauchard Academy** presents an award to the graduating dental student who has exhibited leadership qualities and through his/her accomplishments has demonstrated dedication to the advancement of dental literature.

The **Richmond Dental Study Club Memorial Endowment Scholarship** is awarded annually to a D-3 (junior) dental student based on his/her having a grade-point average in the top 25 percent of the class and demonstrating exceptional leader-

ship and participation in school and/or community extracurricular activities at the end of the D-2 (sophomore) year.

**Alexander Kaufman Award** is awarded to a junior dental student based on class leadership and financial need.

**P. B. Miller Award** goes to the dental student judged by faculty as having demonstrated excellent understanding of the relationship between restorative dentistry and periodontics.

**Robert M. Saunders Scholarship** is awarded to a junior or senior Virginia resident predoctoral dental student with excellent academic credentials.

## Curriculum leading to the D.D.S. degree

The curriculum in the dental school is organized into a competency-based, four-year program leading to the doctor of dental surgery (D.D.S.) degree. The academic year begins in July and extends through June. The program emphasizes study in three broad areas: biomedical sciences, clinical sciences and behavioral sciences.

The biomedical sciences include the in-depth study of human anatomy, biochemistry, genetics, material science, microbiology, pathology, pharmacology and physiology.

The clinical sciences prepare the student for the actual practice of dentistry and provide exposure to the various specialties in dentistry.

The behavioral sciences cover such topics as dental health needs, the system of health care delivery, practice management, professional ethics and behavioral factors.

Laboratory and clinical experiences are offered throughout the four years to develop the skills and judgment vital to the practice of general dentistry.

In general, courses offered as part of the curriculum in dentistry are not available to other students in the university. Exceptions may be granted by the dean of the School of Dentistry to students enrolled in graduate degree programs upon written request of the department chair in which the student is seeking a degree.

	credits
<b>Freshman, first semester</b>	
ANAT 501 Gross Anatomy	7.0
ANAT 503 Neuroanatomy	1.5
BIOC 501 Biochemistry	3.0
DENS 510 Scientific Inquiry	1.0
DENS 511 Dentistry and Education	1.0
DENS 515 Introduction to Clinical Dentistry	1.5
HGEN 531 Dental Genetics	2.0

GENP 501 Introduction to Preventive Dentistry	0.5
GENP 510 Dental Materials	2.5
GENP 511 Oral Anatomy and Occlusion	4.0

**Freshman, second semester**

ANAT 502 Microscopic Anatomy	6.0
DENS 515 Introduction to Clinical Dentistry	1.5
GENP 512 Operative Dentistry	6.5
MICR 513 Infection and Immunity in Dentistry	5.0
PHIS 502 Mammalian Physiology	5.0
PATH 601 General Pathology	6.0

**Sophomore, first semester**

DENS 621 Occlusion	2.0
DENS 625 Clinical Skills I	1.0
GENP 620 Cariology	3.0
GENP 621 Operative Dentistry	3.0
ORPT 621 Dental Radiology	1.0
ORTH 623 Principles of Orthodontics	2.0
PERI 626 Periodontics I	2.0
PHTX 609 Dental Pharmacology and Pain Control	*
PROS 622 Preclinical Fixed Prosthodontics	*
PROS 624 Preclinical Removable Denture Prosthodontics	*

**Sophomore, second semester**

DENS 626 Clinical Skills II	2.0
ENDO 622 Principles of Endodontics	2.5
HGEN 631 Advanced Dental Genetics	1.0
ORPT 622 Oral Pathology	2.5
ORSG 622 Introduction to Oral Surgery	1.0
PEDD 622 Introduction to Pediatric Dentistry	2.5
PERI 629 Periodontics II	4.0
PHTX 609 Dental Pharmacology and Pain Control	4.0
PROS 622 Preclinical Fixed Prosthodontics	6.5
PROS 624 Preclinical Removable Prosthodontics	7.5

**Junior, first semester**

DENS 735 Patient Management and Professional Conduct	3.0
ENDO 731 Endodontic Therapy	1.0
ENDO 739 Clinical Endodontics III	*
GENP 739 Clinical Operative III	*
GENP 745 Clinical Principles of Restorative Dentistry	1.0
ORPT 737 Radiology Rotation	*
ORSG 731 Medical Management and Emergency Care for the Dental Patient	2.5
ORSG 739 Clinical Oral Surgery III	*
ORTH 739 Clinical Orthodontics III	*
PEDD 733 Advanced Pediatric Dentistry	*
PEDD 739 Clinical Pediatric Dentistry III	*
PERI 733 Periodontics III	1.0
PERI 739 Clinical Periodontics III	*
PHTX 611 Dental Pharmacology and Pain Control	2.0
PROS 731 Complete Denture Prosthodontics	1.5
PROS 739 Clinical Removable Prosthodontics III	2.0
PROS 739 Clinical Fixed Prosthodontics III	*

**Junior, second semester**

DENS 733 Geriatric Dentistry	1.0
DENS 735 Patient Management and Professional Conduct	3.0
ENDO 739 Clinical Endodontics III	1.5
GENP 739 Clinical Operative III	5.0
ORPT 732 Clinical Oral Pathology and Oral Medicine	1.0
ORPT 737 Radiology Rotation	**

ORSG 733 Principles of Oral and Maxillofacial Surgery	2.5
ORSG 739 Clinical Oral Surgery III	1.5
ORTH 733 Orthodontic Therapy	1.0
ORTH 739 Clinical Orthodontics III	1.5
PEDD 733 Advanced Pediatric Dentistry	2.0
PEDD 739 Clinical Pediatric Dentistry III	1.5
PERI 739 Clinical Periodontics III	5.0
PROS 735 Removable Partial Denture Lecture	1.5
PROS 737 Prosthodontic Diagnosis and Treatment Planning	1.0
PROS 739 Clinical Removable Prosthodontics III	1.5
PROS 739 Clinical Fixed Prosthodontics III	2.0
PROS 745 Clinical Principles of Fixed Prosthodontics	1.0

**Senior, first semester**

DENS 741 Head and Neck Pain	1.0
DENS 745 Patient Management and Professional Conduct	3.0
ENDO 749 Clinical Endodontics IV	*
GENP 740 Practice Management	1.5
GENP 741 Practice Administration	3.0
GENP 742 Senior Treatment Planning Seminar	2.0
GENP 743 General Practice Restorative Unit	*
GENP 749 Clinical Operative IV	*
ORPT 747 Radiology Rotation	1.5
ORSG 749 Oral Surgery/Urgent Care Clinic	*
PEDD 749 Clinical Pediatric Dentistry IV	*
PERI 749 Clinical Periodontics IV	*
PROS 749 Clinical Removable Prosthodontics IV	*
PROS 749 Clinical Fixed Prosthodontics IV	*

**Senior, second semester**

DENS 745 Patient Management and Professional Conduct	3.0
ENDO 749 Clinical Endodontics IV	1.5
GENP 743 General Practice Restorative Unit	6.0
GENP 749 Clinical Operative IV	4.0
ORSG 749 Oral Surgery/Urgent Care Clinic	2.0
PEDD 749 Clinical Pediatric Dentistry IV	2.0
PERI 749 Clinical Periodontics IV	4.0
PROS 749 Clinical Removable Prosthodontics IV	6.0
PROS 749 Clinical Fixed Prosthodontics IV	6.0

\* Continues into second semester.

\*\* Completed first semester senior year.

**Academic Performance Evaluation**

The faculty of the VCU School of Dentistry has the responsibility for evaluating the student's academic performance. It is incumbent on the course directors or their designees to specify, at the time that courses first convene, the criteria to be used in student assessment and the standards by which they will be judged.

The VCU School of Dentistry Guidelines for the Evaluation of Student Performance and Academic Status are distributed to all students at the beginning of their study. They are available upon request from the Office of Academic Affairs, School of Dentistry.

**Office of Continuing Education**
**Martha C. Clements**

Director, Continuing Education (1999)  
B.S. 1993 Virginia Commonwealth University  
M.Ed. 1997 Virginia Commonwealth University

For every professional person who serves the health sciences, education must be a lifetime commitment.

Graduation from dental school is the beginning of a lifelong educational experience for the serious, conscientious student of dentistry. Regardless of how well prepared a health professional may be at the time of graduation, the adequate knowledge of yesterday is often insufficient information for today and tomorrow. With the rapid advancements made in dental technology and techniques, the professional must constantly seek new knowledge if the health care provider is to improve the health care given to patients.

Although the majority of continuing education courses are presented at the School of Dentistry, some offerings are given in other locations. The courses, which vary in length from one day to four days, are scheduled throughout the year and consist of a variety of instructional methods from didactic to hands-on participation in clinical programs.

The instructional staff is comprised of faculty from the VCU School of Dentistry, guest lecturers from other dental schools, and members of the dental profession and related professions from the United States and other countries.

**Advanced Dental Education programs**

The School of Dentistry provides advanced dental education programs in the areas of endodontics, oral and maxillofacial surgery, orthodontics, pediatric dentistry, periodontics, prosthodontics and advanced education in general dentistry (AEGD). Satisfactory completion of the program leads to the award of a certificate of training and certifies eligibility for examination by the appropriate specialty board. All programs are accredited by the Commission on Dental Accreditation of the American Dental Association. A program also is offered for advanced education in anesthesiology for dentistry. Those enrolled in the advanced education programs are full-time resident trainees, considered to be the



equivalent of full-time students. Under special circumstances, trainees may be accepted into some programs on a part-time basis.

Students enrolling in endodontics, orthodontics, pediatric dentistry, periodontics, and prosthodontics are also awarded a master of science degree upon completion of the requirements for the certificate and successful defense of a thesis. The certificate program and master of science must be completed concurrently. See the School of Dentistry Graduate Program for more information on the master of science degree program.

Applications for admission should be directed to the director of the appropriate program, School of Dentistry, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566. Successful completion of Part II of the National Board Dental Examination is required prior to admittance to the program.

## Advanced Education in General Dentistry

### Carol N. Brooks

Assistant Professor of General Practice and Program Director (1995)  
B.S. 1975 Virginia Commonwealth University  
D.D.S. 1994 Virginia Commonwealth University  
Certificate 1995 Advanced Education in General Dentistry

The purpose of this 12-month advanced education residency program is to provide advanced education and clinical experience to prepare dental school graduates for a career in the practice of comprehensive, general dentistry. This program has a strong emphasis on treatment planning, experience with new technology, developing skills in aesthetic dentistry and restoration of implants. Graduates of this program will have attained added competency and confidence in all areas of dental care, practice management and professional responsibility. Further, this program provides residents with meaningful experiences in the delivery of dental care to diverse populations and people at high risk for dental disease. A strong affiliation exists between the School of Dentistry and the statewide Virginia Area Health Education Center (AHEC), whose mission is to increase primary health care in underserved areas. The AEGD program works in concert with AHEC to deliver dental care and recruit/train minority health care providers from health professional shortage areas.

The School of Dentistry is committed to advanced dental education. The residents will receive hands-on experience with diagnostic and therapeutic care of special patient populations in addition to extensive training in the art and science of general dentistry. AEGD residents may be required to participate in off-site clinical experiences outside the city of Richmond, Va. Funds will be provided for travel and lodging when required.

## Eligibility and selection

Dentists with the following qualifications are eligible to apply for the AEGD program: Dental graduates from institutions in the United States accredited by the Commission on Dental Accreditation of the American Dental Association and who have passed Part I of the National Board Examination.

Selection criteria include: didactic and clinical achievements, extramural experience, interpersonal skills and a demonstrated commitment to pursue a career in general dentistry. Every effort is made to recruit qualified applications from minority dentists and dentists from health professional shortage areas or dentists who profess a desire to serve in these areas. A selection committee consisting of the program director, the assistant dean for admissions, members from specialty areas, former residents and current residents will screen all applications. Using the above-mentioned selection criteria, the most promising applicants will be invited for personal interviews. Trainees and alternates will be selected. This program participates in the Postdoctoral Application Support Service Program and the Postdoctoral Dental Matching Program. Telephone (804) 828-3601; fax (804) 828-3159; e-mail cbrooks@vcu.edu.

## Postgraduate Training in Anesthesia for Dentistry

A two-year program in anesthesiology and related sciences prepares the graduate dentist with the necessary didactic and clinical skills for a career in teaching or private practice.

The didactic component combines course work from two academic areas: physical diagnosis directed by the Department of Internal Medicine, School of Medicine, and didactic courses and educational seminars in the Department of Anesthesiology, School of Medicine.

One-month clinical rotations in medicine and cardiology and an eight-month rotation in anesthesiology are supplemented with weekly assignments in the outpatient anesthesia clinic in the dental school, the temporomandibular joint and chronic facial pain clinic, pediatric dentistry sedation clinic, and the ambulatory anesthesia clinics in the oral surgery department at the A.D. Williams Clinic and in the Nelson Clinic.

The program meets the guidelines of the Commission on Dental Accreditation of the American Dental Association.

For information contact the Program Director, Department of Pediatric Dentistry, Virginia Commonwealth University, Medical College of Virginia Campus, School of Dentistry, P.O. Box 980566, Richmond, VA 23298-0566.

## Endodontics

### Gary R. Hartwell

Professor and Department Chair, Endodontics (1987)  
D.D.S. 1966 West Virginia University  
M.S. 1974 George Washington University

The Advanced Specialty Education Program in Endodontics offers the student a comprehensive 24-month course of study in clinical and didactic endodontics. The program is designed to educate qualified individuals to pursue careers as teachers, researchers and practicing clinical specialists of endodontics. The program is designed to meet the educational requirements for limitation of practice to the specialty of endodontics and examination by the American Board of Endodontics. The program is composed of two interrelated phases. The first phase consists of lecture courses, which provide the student with a firm biological basis for patient care. The second phase consists of lectures, seminars and clinical training, which are designed to produce clinical proficiency in endodontics. Research experience is gained through the completion of an individual research project and master's thesis. The clinical curriculum will occupy approximately 50 to 60 percent of the resident's time and the didactic curriculum makes up the remaining 20 to 30 percent of the program.

Students completing the program earn a specialty certificate in endodontics and a master of science degree. Students must complete the requirements for the master's degree prior to being awarded the specialty certificate.

The program conforms to the Standards for Advanced Specialty Education in Endodontics and carries a full approval status from the Commission on Dental Accreditation of the American Dental Association.

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## **Oral and Maxillofacial Surgery**

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### **Robert A. Strauss**

Associate Professor and Program Director (1987)  
B.S. 1975 State University of New York at Buffalo  
D.D.S. 1979 State University of New York at Buffalo  
M.D. 2002 University of Health Sciences, Antigua

The oral and maxillofacial surgery program is designed to provide extensive didactic and clinical experience in all aspects of the specialty. Those who complete training satisfactorily fulfill the prerequisites for examination and certification by the American Board of Oral and Maxillofacial Surgery.

The didactic portion of the program includes formal courses in oral pathology, anatomy and physical diagnosis, as well as numerous weekly conferences and seminars. Clinical rotations on oral pathology, anesthesia, medicine, surgical oncology, neurosurgery, cardiology, plastic surgery, emergency room and the trauma services are used to supplement the trainee's surgical experience. Throughout the program there is a constant correlation of the clinical experience with the biomedical sciences.

Through the multiple clinical and didactic facilities of the VCU medical center complex, the McGuire Veterans Affairs Medical Center, and St. Mary's Hospital, there is ample material for education in the latest oral and maxillofacial surgical techniques. The oral and maxillofacial surgery service is responsible for diagnosis and management of diseases and injuries related to the oral and facial region. Trainees are involved in all aspects of treatment including simple and complicated oral surgery, anesthesia and pain control, oral and maxillofacial trauma, preprosthetic surgery, orthognathic surgery, head and neck pathology, oral and maxillofacial reconstruction, temporomandibular joint surgery, laser surgery, cosmetic facial surgery, microneural and microvascular surgery. During the four years, the trainee assumes ever-increasing responsibilities as time and abilities dictate.

Upon satisfactory completion of the four-year residency, the trainee may earn the

doctor of medicine degree from the School of Medicine by enrolling in the second and third years of that curriculum.

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## **Orthodontics**

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### **Steven J. Lindauer**

Professor and Department Chair, Orthodontics (1989)  
B.A. 1982 University of Pennsylvania  
D.M.D. 1986 University of Connecticut  
M.D.Sc. 1989 University of Connecticut

The Department of Orthodontics at VCU's Medical College of Virginia Campus offers a 24-month advanced education master of science program. The program teaches state-of-the-art clinical care in an environment modeled after private orthodontic practice. The curriculum is composed of seminars and small group instruction with emphasis on critical thinking and problem solving. Contemporary concepts of orthodontic treatment are reviewed for substantive and scientific content. Also included are regularly scheduled orthognathic surgery conferences and seminars with other dental and medical specialists.

The postgraduate program is designed to develop skilled practitioners who are prepared to grow with the future and manage busy orthodontic practices. The goal is not only to familiarize future orthodontists with contemporary techniques but also to teach them how to interpret cutting-edge scientific information and use it to approach clinical challenges logically and practically. Clinical experience consists of a wide variety of orthodontic patients, including complex cases requiring orthognathic surgery and patients with facial clefts and other craniofacial abnormalities. An original research experience is an integral part of the program with each project intended to produce results suitable for publication in a nationally circulated orthodontic journal. The successful completion of a research project is a requirement of the program. All senior residents present their research at the Virginia Association of Orthodontists meeting. The program makes students educationally qualified to take the written portion of the American Board of Orthodontics in the senior year. Residents are required to pass the written portion of the American Board of Orthodontics examination prior to graduation, and are encouraged to continue and complete the board certification process. This exam is given prior to the American Association of Orthodontists meeting.

Students completing the program earn a specialty certificate in orthodontics and master of science degree. Students must complete the requirements for the master's degree prior to being awarded the specialty certificate.

The program is accredited by the Commission on Dental Accreditation of the American Dental Association.

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## **Pediatric Dentistry**

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### **Arthur P. Mourino**

Associate Professor and Program Director (1974)  
B.S. 1965 Georgetown University  
M.S. 1967 Hofstra University  
D.D.S. 1972 Georgetown University  
M.S.D. 1974 Indiana University

The Advanced Education Program in Pediatric Dentistry offers the student a comprehensive 24-month course of study in clinical and didactic pediatric dentistry. The program is designed to meet the educational requirements for limitation of practice to the specialty of pediatric dentistry and examination by the American Board of Pediatric Dentistry. The program emphasizes a diversified educational experience. The program places emphasis on all phases of pediatric dentistry including trauma, preventive dentistry, restorative, endodontics, periodontics, oral surgery, orthodontics and hospital dentistry. The program enables the student to provide comprehensive oral health care for the well child, the medically compromised and children with special needs. There is extensive use of various treatment modalities for pain control and behavioral management, such as sedation, analgesia and general anesthesia. Research experience is gained through completion of an individual research project and master's thesis.

Seminars are held in pediatric dentistry, orthodontic diagnosis and treatment, treatment planning, growth and development, cephalometric analysis, pediatric dentistry literature review and behavior guidance. Formal courses in biostatistics, principles of pediatrics, pediatric advanced life support, head and neck anatomy, neurodevelopmental disabilities, leadership seminars, basic sciences and clinical core courses are required. The students participate in undergraduate clinical teaching and supervision. One-month rotations occur in general anesthesia, and two-week rotations occur in the pediatric emergency room, pediatric medicine and oral pathology. During the

year, rotations in cleft palate, craniofacial anomalies and hemophilia occur. Optional elective rotations are available in treating institutionalized handicapped patients in Lynchburg and in providing treatment in rural areas that have low access to dentistry on the school's mobile dental van. Elective didactic courses also are available.

Students completing the program earn a specialty certificate in pediatric dentistry and a master of science degree. Students must complete the requirements for the master's degree prior to being awarded the specialty certificate.

The program is accredited by the Commission on Dental Accreditation of the American Dental Association.

## Periodontics

### Thomas C. Waldrop

Professor and Program Director (1994)  
D.D.S. 1973 Virginia Commonwealth University  
M.S. 1978 University of Texas  
Certificate 1978 Wilford Hall Medical Center  
Diploma 1982 American Board of Periodontology

The advanced education program in periodontics consists of a 36-month curriculum leading to a certificate of training in periodontics and master of science degree. Courses in the basic and clinical sciences, medicine, head and neck anatomy, statistics and advanced cardiac life support are required. Periodontal courses include lectures, current and periodontal literature, medical-oral medicine, treatment planning, case presentation and surgical seminars. All provide opportunities for concentrated learning and experience in the clinical specialty of periodontics, as well as interaction with other clinical specialties. The program includes a diverse program in clinical instruction. The program affords the student the opportunity to develop the capacity for judgment and adaptability from knowledge of basic and clinical science and from evaluation of the literature. No grade lower than 80 percent or passing is acceptable from any basic science or periodontal course work. Students are expected to be able to utilize a computer to prepare lectures and to access medical library and Internet resources. The program prepares the student for board certification in the specialty of periodontics.

Emphasis also is placed on the most current clinical advances in implantology, bone augmentation techniques, periodontal regeneration and periodontal plastic surgery

procedures. A comprehensive conscious sedation program is offered. Rotations include oral medicine, anesthesiology and oral pathology. The program involves clinical and classroom teaching to undergraduate students. Research on a topic that is reviewed and approved by a faculty committee is required. Upon completion of the research, the student is required to prepare a research defense, thesis and manuscript for publication. Certificates are not awarded until completion of master of science requirements. Specialty faculty attend the program, including affiliate faculty in the basic sciences. The student is responsible for the purchase of program-required equipment and all fees. First-, second- and third-year students receive a stipend. The program starts the first week in July.

## Prosthodontics

### David R. Burns

Professor and Program Director (1985)  
B.S. 1976 Lewis and Clark College  
D.M.D. 1980 University of Oregon  
Certificate 1985 Emory University

## Combined D.D.S. and M.S. or Ph.D. programs

The dental curriculum provides an opportunity for interested dental students to enter a combined D.D.S./M.S. or Ph.D. program.

Individualized curricula are developed for such students with the approval of the students' advisers in the graduate department of study and the assistant dean for research of the School of Dentistry. Ordinarily, the combined program requires more than four years to complete requirements for both degrees. For further details, contact the assistant dean for research at the School of Dentistry.

## Department of General Practice

### Gilbert L. Button

Associate Professor and Department Chair (1976)  
B.S. 1969 Virginia Polytechnic Institute and State University  
D.D.S. 1973 Virginia Commonwealth University  
Certificate: Prosthodontics 1986 Virginia Commonwealth University

Barnes Jr., Robert F. (1977) Associate Professor  
B.A. 1967 University of Virginia  
D.D.S. 1973 Virginia Commonwealth University

Certificate: Prosthodontics 1983 Virginia Commonwealth University  
Bogacki, Russell (1997) Assistant Professor  
B.S. 1993 George Mason University  
D.D.S. 1997 Virginia Commonwealth University  
Brooks, Carol Nibley (1982) Associate Professor and Director of Advanced Education in General Dentistry Program  
B.S. 1975 Virginia Commonwealth University  
D.D.S. 1994 Virginia Commonwealth University  
Certificate A.E.G.D. 1995 Virginia Commonwealth University  
Certosimo, Alfred J. (1993) Assistant Professor  
B.S. 1973 Rutgers University  
D.M.D. 1977 University of Pennsylvania  
C.D.R. 1988 Naval Dental School  
M.S.E.D. 1994 Old Dominion University  
Foster, Francis M. (1991) Assistant Professor  
B.S. 1942 Virginia Union University  
D.D.S. 1946 Howard University  
Hagan, Betsy A. (1980) Associate Professor and Associate Dean for Clinical Affairs  
B.S. 1974 Virginia Polytechnic Institute and State University  
D.D.S. 1978 Virginia Commonwealth University  
M.B.A. 1984 Virginia Commonwealth University  
Healy, Michael (2000) Assistant Professor  
B.S. 1979 State University of New York at Oneonta  
D.D.S. 1985 New York University  
Hellman, Larry Frank (1994) Assistant Professor  
B.S. 1963 Midwestern University  
D.D.S. 1967 University of Texas  
M.Ed. 1994 George Washington University  
Moon, Peter C. (1971) Associate Professor  
B.S. 1965 University of Toledo  
M.S. 1968 University of Virginia  
Ph.D. 1971 University of Virginia  
Nance, Elizabeth T. (1994)  
B.S. 1974 Auburn University  
D.D.S. 1977 Virginia Commonwealth University  
M.H.A. 2002 Virginia Commonwealth University  
Robertello, Francis J. (1993) Associate Professor  
B.A. 1964 Syracuse University  
D.M.D. 1968 University of Pennsylvania  
M.S. 1978 University of Michigan  
M.Ed. 1984 George Washington University  
Sarrett, David C. (1992) Professor and Assistant Dean  
D.M.D. 1977 University of Florida  
M.S. 1988 University of Florida  
Wiley, Paul M. (1996) Assistant Professor  
B.A. 1972 University of Virginia  
D.D.S. 1976 Virginia Commonwealth University  
M.S. 1995 University of Michigan  
M.Ed. 1994 George Washington University  
Certificate G.P.R. 1977  
Certificate A.E.G.D. 1985

### Emeritus faculty

Hunt Jr., Lindsay M. (1985) Professor Emeritus, Former Dean and Harry Lyons Professor  
B.A. 1961 University of Oklahoma  
D.D.S. 1965 Baylor University  
Ph.D. 1971 Baylor University

**Adjunct faculty**

Adams, Anne	Adams, Peter*
Bang, Jeffrey	Barnes, Richard
Boyd, Reed	Carter, Malcolm***
Cassidy Jr., Daniel	Cottrell, Richard
Covington, William	Cranham, John
Dent, Daniel	Dettmann, Darryl
Dishman, Michael	Eshleman, R.
Falls, William	Finley-Parker, Kitt
Forgeng, Thomas*	Gamache, Marc D.
Griggs, Edward	Hall, Wanda**
Harrington, N. Wolf	Helvey, Gregg***
Hooper, Chris	Hubbard, Maury
Hudgins, Winfred	Hunter, William
Jenkins, Jerry L.	Johnston, Tim
Kennett, Fred	Kessler, Fred
Kittrell, John	Kontopanos, Greg
Korpics, Louis	Le, Quan
Le, Trang	Lee, Solomon
Levin, Jeff	Levitin, Don
Lewis, Michael*	McCormick, Michael
Michael, Shadia	Miller, Eric
Moretti, Joy	Norbo, Kirk
Pfab, Michael	Roberts, Kate
Robinson, John W.	Root, Noel
Rose, Jennifer	Sayyar, Sean
Shepard, Felix E.	Slattery, Matt
Soltanian, Farshid	Spillers, Ronald
Stenger, Al	Stoner, Ken
Turnage, Neil	Tyler, Michael
Wade, Frank	Waring, James***
Weaver, W. Scott	Woronko, George

**Courses in general practice**

DENS 515 Introduction to Clinical Dentistry  
 DENS 626 Clinical Skills  
 GENP 302 Dental Materials (Dental Hygiene)  
 GENP 307 Research Design and Biostatistics (Dental Hygiene)  
 GENP 501 Introduction to Preventive Dentistry  
 GENP 510 Dental Materials (Dental)  
 GENP 511 Dental Anatomy  
 GENP 512 Operative Dentistry  
 GENP 514 Fundamentals of Occlusion  
 GENP 620 Cariology  
 GENP 621 Operative Dentistry  
 GENP 733 Geriatric Dentistry  
 GENP 739-749 Clinical Operative  
 GENP 740 Practice Management  
 GENP 741 Practice Administration  
 GENP 742 Senior Treatment Planning Seminar  
 GENP 743 General Practice Restorative Unit  
 GENP 745 Clinical Principles of Restorative Dentistry

**Department of Endodontics**

**Gary R. Hartwell**

Professor and Department Chair (1987)  
 D.D.S. 1966 West Virginia University  
 M.S. 1974 George Washington University  
 Diplomate of the American Board of Endodontics

Byrne, B. Ellen (1999) Associate Professor  
 D.D.S. 1983 Virginia Commonwealth University  
 Certificate in Endodontics 1990  
 Ph.D. 1992 Pharmacology, Virginia Commonwealth University  
 Hahn, Chin-Lo (1991) Associate Professor  
 B.D.S. 1982 Taipei Medical College, Taiwan  
 M.S. 1985 University of Maryland, Baltimore  
 Ph.D. 1989 University of Maryland, Baltimore  
 D.D.S. 1991 University of Missouri, Kansas City

**Emeriti faculty**

Dodds, R. Neil, Associate Professor Emeritus  
 B.A. 1953 Carroll College  
 D.D.S. 1957 Creighton University  
 England Jr., Marshall C., Professor Emeritus  
 B.S. 1954 Maryville College  
 D.D.S. 1958 Medical College of Virginia  
 M.S. 1967 Medical College of Virginia

**Clinical faculty**

Archer	Blundell
Brofsky	Chau
Fessenden	Forte
Lance	Lieb
Martinez	Monts
Spencer	Tordik
Vranas	Wood

**Courses in endodontics (ENDO)**

ENDO 622 Principles of Endodontics  
 ENDO 731 Endodontic Therapy  
 ENDO 739-749 Clinical Endodontics

**Department of Oral Pathology**

**James C. Burns**

Professor and Department Chair (1978)  
 B.S. 1968 Virginia Military Institute  
 D.D.S. 1972 Virginia Commonwealth University  
 M.S.Ed. 1975 University of Southern California  
 Ph.D. 1979 Virginia Commonwealth University

Abbey, Louis M. (1971) Professor  
 A.B. 1963 Earlham College  
 D.M.D. 1967 Tufts University  
 M.S. 1971 Tufts University  
 M.F.A. 1995 Virginia Commonwealth University  
 Carter, Laurie C. (2000) Associate Professor  
 B.A. 1979 Canisius College  
 D.D.S. 1983 State University of New York at Buffalo  
 M.A. 1986 State University of New York at Buffalo  
 Ph.D. 1993 State University of New York at Buffalo  
 Page, Dennis G. (1973) Associate Professor  
 A.B. 1963 Westminster College  
 D.D.S. 1967 University of Illinois  
 M.S. 1973 Loyola University  
 Svirsky, John A. (1976) Professor  
 B.A. 1969 University of Richmond  
 D.D.S. 1973 Virginia Commonwealth University  
 M.Ed. 1979 Virginia Commonwealth University

**Adjunct faculty**

Sawicki, Vincent A. (1981) Associate Clinical Professor  
 B.S. 1972 Saint Francis College  
 M.S. 1974 Virginia Commonwealth University  
 D.D.S. 1979 Virginia Commonwealth University  
 Ph.D. 1980 Virginia Commonwealth University

**Emeriti faculty**

Salley, John J., Professor Emeritus  
 D.D.S. 1951 Medical College of Virginia  
 Ph.D. 1954 University of Rochester  
 D.Sc. 1975 Boston University

**Courses in oral pathology (ORPT)**

ORPT 621 Dental Radiology  
 ORPT 622 Oral Pathology  
 ORPT 732 Clinical Oral Pathology and Oral Medicine  
 ORPT 737-747 Radiology Rotation

**Department of Oral and Maxillofacial Surgery**

**A. Omar Abubaker**

Associate Professor and Department Chair (2002)  
 B.D.S. 1975 University of Alexandria, Egypt  
 Ph.D. 1984 University of Pittsburgh  
 D.M.D. 1990 University of Pittsburgh  
 Certificate Oral and Maxillofacial Surgery 1990  
 University of Pittsburgh

Campbell, Robert L. (1977) Professor of Oral and Maxillofacial Surgery and Anesthesiology  
 B.S. 1964 John Carroll University  
 D.D.S. 1968 Case Western Reserve University  
 Certificate Oral and Maxillofacial Surgery, 1971, Cleveland Metropolitan General  
 Giglio, James A. (1981) Professor  
 B.A. 1964 La Salle College  
 D.D.S. 1968 University of Maryland  
 Certificate Oral and Maxillofacial Surgery, 1974, State University of New York  
 M.Ed. 1989 Virginia Commonwealth University  
 Hardigan, James E. (1975) Associate Professor and Associate Dean for Administrative Affairs  
 B.S. 1968 Northeastern University  
 M.B.A. 1970 Northeastern University  
 Ph.D. 1975 Cornell University  
 Laskin, Daniel M. (1984) Professor and Chair Emeritus  
 B.S. 1947 Indiana University  
 D.D.S. 1947 Indiana University  
 M.S. 1951 University of Illinois  
 Certificate Oral and Maxillofacial Surgery, 1951, Cook County Hospital  
 D.Sc. (Hon) 2001 Indiana University  
 Strauss, Robert A. (1987) Associate Professor  
 B.S. 1975 and D.D.S. 1979 State University of New York at Buffalo  
 Certificate Oral and Maxillofacial Surgery, 1984, Michael Reese Hospital and Medical Center  
 M.D. University of Health Sciences, Antigua

### Clinical faculty

Alexander	Bissell
Carvajal	Cuttino
Cyr	Fidler
Davenport	Doriot
Gibberman	Hartman
Hoard	Kenney
Kevorkian	Lee, J.
Lee, N.R.	McAndrew
Metzger	Miller
Mueller	Murphy
Nelson	Niamtu
O'Neill	Peters
Pirok	Priest
Sellers	Smilek
Swanson	Tankersley
West	Zoghby

### Courses in oral and maxillofacial surgery

DENS 741 Head and Neck Pain  
 ORSG 622 Introduction to Oral and Maxillofacial Surgery  
 ORSG 731 Management of the Medically Compromised Patient and Medical Emergencies in the Dental Office  
 ORSG 733 Principles of Oral and Maxillofacial Surgery  
 ORSG 739 Oral Surgery/Urgent Care Clinic  
 ORSG 749 Oral Surgery/Urgent Care Clinic

### Department of Orthodontics

#### Steven J. Lindauer

Professor and Department Chair (1989)  
 B.A. 1982 University of Pennsylvania  
 D.M.D. 1986 University of Connecticut  
 M.D.Sc. Orthodontics 1989 University of Connecticut

Shroff, Bhavna (2002) Professor  
 B.S. (1977) Ministry of Education, France  
 D.D.S. (1982) Paris V  
 M.H.B. (1983) Paris VI  
 M.Dent.Sc. Orthodontics (1989) University of Connecticut

Tufekci, Eser (2002) Assistant Professor  
 D.D.S. 1989 University of Istanbul  
 M.S. 1993 Ohio State University  
 Ph.D. 1998 Ohio State University  
 Certificate Orthodontics 2002 University of Minnesota

### Clinical faculty

Anderson	Butterfoss
DuVall	Gardner
Gills	Kulnis
Mei	Regimbal
Schufeldt	Wendell

### Courses in orthodontics (ORTH)

ORTH 623 Orthodontics  
 ORTH 733 Orthodontic Therapy  
 ORTH 739 Clinical Orthodontics

### Department of Pediatric Dentistry

#### John H. Unkel

Associate Professor and Department Chair (2003)  
 B.A. 1984 Carroll College  
 D.D.S. 1988 Northwestern University  
 Certificate: 1991 Pediatric Dentistry Children's Hospital of Pittsburgh  
 M.P.A. 1999 West Virginia University

Carney, Jacqueline M. (2003) Assistant Professor  
 B.A. 1988 University of Tennessee  
 D.D.S. 2001 Virginia Commonwealth University  
 M.S. and Certificate: 2003 Pediatric Dentistry, Virginia Commonwealth University

Cooke, Matthew R. (2001) Assistant Professor  
 B.S. 1993 Longwood College  
 D.D.S. 1997 Virginia Commonwealth University  
 M.P.H. 2000 Virginia Commonwealth University  
 Certificate: Pediatric Dentistry 1999 Virginia Commonwealth University  
 Certificate: Dental Anesthesiology (2001) Virginia Commonwealth University

Hughes, Tegwyn L. (2003) Assistant Professor  
 B.A. 1992 University of Nebraska  
 D.D.S. 1996 University of Nebraska Medical Center  
 Certificate: 2002 Pediatric Dentistry, University of North Carolina at Chapel Hill, School of Dentistry  
 Certificate: 2002 Dental Public Health, University of North Carolina at Chapel Hill, School of Public Health

Mourino, Arthur P. (1974) Associate Professor  
 B.S. 1965 Georgetown University  
 M.S. 1967 Hofstra University  
 D.D.S. 1972 Georgetown University  
 M.S.D. 1974 Indiana University  
 Walton III, Martin L. (1998) Assistant Professor  
 B.A. 1968 Miami University, Ohio  
 D.D.S. 1974 Meharry Medical College  
 Certificate 1982 Pediatric Dentistry, University of Maryland

#### Emeritus faculty

Farrington, Frank H. (1977) Professor Emeritus  
 D.D.S. 1965 Marquette University  
 M.S. 1969 Marquette University  
 Certificate: 1969 Pediatric Dentistry, Marquette University

### Clinical faculty

Adams	Atkins
Avent	Brownstein
Gokli	Huie
Kendig	Maestrello
Pope	Sorin
Vitsky	

### Courses in pediatric dentistry (PEDD)

PEDD 622 Introduction to Pediatric Dentistry  
 PEDD 733 Advanced Pediatric Dentistry  
 PEDD 739-749 Clinical Pediatric Dentistry

### Department of Periodontics

#### John A. Burmeister

Associate Professor and Department Chair (1977)  
 B.A. 1965 Wittenberg University  
 D.D.S. 1970 Ohio State University  
 M.S. 1978 Virginia Commonwealth University

Abbott, David M. (1975) Associate Professor  
 B.S. 1968 Madison College  
 D.D.S. 1972 University of North Carolina  
 M.S.D. 1975 University of Minnesota  
 Butler, James H. (1974) Professor  
 B.A. 1958 Denison University  
 D.D.S. 1962 Ohio State University  
 M.S. 1967 University of Rochester  
 Califano, Joseph V. (1986) Associate Professor  
 B.A. 1979 Hofstra University  
 D.D.S. 1984 Virginia Commonwealth University  
 Ph.D. 1990 Virginia Commonwealth University  
 Koertge, Thomas E. (1982) Associate Professor  
 B.A. 1975 Southern Illinois University  
 D.M.D. 1978 Southern Illinois University  
 Ph.D. 1984 University of Iowa  
 Rogers, Jeffrey D., Assistant Professor  
 B.S. 1990 University of Utah  
 D.D.S. 1993 Virginia Commonwealth University  
 Ph.D. 2000 State University of New York at Buffalo  
 Schenkein, Harvey A. (1978) Paul Tucker Goad Professor of Periodontics and Microbiology and Immunology and Assistant Dean for Research  
 B.S. 1970 State University of New York  
 D.D.S. 1974 State University of New York  
 Ph.D. 1978 State University of New York  
 Waldrop, Thomas C. (1994) Professor  
 B.S. 1969 University of Georgia  
 D.D.S. 1973 Virginia Commonwealth University  
 M.S. 1978 University of Texas  
 Certificate 1978 Wilford Hall Medical Center

#### Emeritus faculty

Sarbin, A. G., Associate Professor Emeritus  
 D.D.S. 1957 Ohio State University  
 M.S. 1966 Ohio State University  
 Wiebusch, F. B., Professor Emeritus  
 B.B.A. 1943 University of Texas  
 D.D.S. 1947 University of Texas

### Clinical faculty

Block	Doswell
Faragehi	Green
Griffin	Kaugars, C.
Kaurich	Lanning
Maynard	Melvin
Moretti	Richardson
Ross	Slagle
Sweeney	Ziegler

#### Research assistant

Williams

## Courses in periodontics (PERI)

PERI 326 Periodontics (Dental Hygiene)  
 PERI 329 Periodontics II (Dental Hygiene)  
 PERI 626 Periodontics I  
 PERI 629 Periodontics II  
 PERI 733 Periodontics III  
 PERI 739-749 Clinical Periodontics

## Department of Prosthodontics

### John W. Unger

Professor, Eminent Scholar and Department Chair  
 (1988)  
 A.A. 1968 Springfield Junior College  
 B.S. 1970 University of Illinois  
 D.D.S. 1972 University of Illinois  
 Certificate 1974 Prosthodontics

Beck, David A. (1980) Associate Professor  
 B.S. 1974 University of New Mexico  
 D.D.S. 1977 Baylor University  
 Certificate Prosthodontics 1980 VAMC Wood, Wis.  
 Betzhold, William C. (1993) Assistant Professor  
 B.S. 1967 Ohio State University  
 D.D.S. 1971 Ohio State University  
 Certificate: Prosthodontics 1995 Virginia  
 Commonwealth University  
 Bui, Bach  
 B.S. 1987 University of Florida  
 D.D.S. 1992 Virginia Commonwealth University  
 Certificate: Prosthodontics 1995 Virginia  
 Commonwealth University

Burns, David R. (1985) Associate Professor  
 B.S. 1976 Lewis and Clark College  
 D.M.D. 1980 University of Oregon  
 Certificate 1985 Emory University  
 Coffey, James P. (1992) Associate Professor  
 B.S. 1977 University of Minnesota  
 D.D.S. 1982 University of Minnesota  
 M.S. 1984 University of Minnesota  
 Douglas Jr., Hugh B. (1970) Associate Professor  
 B.S. 1966 The College of William and Mary  
 D.D.S. 1970 Virginia Commonwealth University  
 M.S. 1974 University of North Carolina  
 Janus, Charles E. (1981) Associate Professor  
 B.S. 1974 Belmont Abbey College  
 D.D.S. 1978 Virginia Commonwealth University  
 Kazanoglu, Altug (1980) Associate Professor  
 D.D.S. 1972 University of Istanbul, Turkey  
 M.S. 1976 University of Missouri, Kansas City  
 Certificate 1977 University of Pittsburgh  
 D.M.D. 1980 Washington University, Mo.

### Emeriti faculty

Bell Jr., Dewey H., Professor Emeritus of Removable  
 Prosthodontics  
 B.S. 1948 Wofford College  
 D.D.S. 1952 Medical College of Virginia  
 McCasland, John P., Associate Professor Emeritus  
 B.S. 1953 Howard Payne College  
 D.D.S. 1957 Baylor University

### Clinical faculty

Crabtree	Ibrahim
Jenkins	Morgan
Muncy	Shehab
Stewart	

## Courses in prosthodontics (PROS)

PROS 622 Preclinical Fixed Prosthodontics  
 PROS 624 Preclinical Removable Prosthodontics  
 PROS 731 Complete Denture Prosthodontics  
 PROS 735 Removable Partial Denture – Lecture  
 PROS 737 Prosthodontics Diagnosis and Treatment  
 Planning  
 PROS 739-749 Clinical Removable Prosthodontics  
 PROS 739-749 Clinical Fixed Prosthodontics  
 PROS 745 Clinical Principles of Fixed Prosthodontics

## Conjoint courses

DENS 511 Dentistry and Education  
 DENS 515 Introduction to Clinical Dentistry  
 DENS 621 Occlusion  
 DENS 735, 745 Patient Management and  
 Professional Conduct  
 DENS 625 Clinical Skills I  
 DENS 626 Clinical Skills II  
 DENS 733 Geriatric Dentistry  
 DENS 741 Head and Neck Pain  
 OCMB 510 Scientific Inquiry

# School of Medicine

## Professional Programs

The School of Medicine of the then Medical College of Virginia opened on Nov. 5, 1838, as the medical department of Hampden-Sydney College.

Full-time clinical faculty members were first appointed in 1928, and improved facilities became available between 1936 and 1941 with the completion of the 600-bed West Hospital, A. D. Williams Clinic and Hunton Hall dormitory, located on the current site of the Main Hospital building. Growth in faculty, students and facilities continued after World War II, leading to the development of today's academic health center.

Hospital facilities on the MCV Campus include both inpatient and outpatient facilities. MCV Hospitals of Virginia Commonwealth University Health System is licensed for 902 beds. In addition, the hospital at the McGuire Veterans Affairs Medical Center (600 beds) provides excellent patient care, training and research opportunities for the School of Medicine through its affiliation programs.

### General information

The mission of the School of Medicine is constant improvement of the quality of health care for citizens of Virginia, using

innovative, scholarly activity to create new knowledge, to provide better systems of medical education and to develop more effective health care methods.

The School of Medicine shares the general objectives of VCU.

1. To maintain an environment of educational excellence that will attract students and faculty interested in an institution maintaining the highest academic standards.
2. To promote an educational atmosphere that will develop in students: (a) desire and interest in lifelong learning, (b) intellectual curiosity, and (c) excellence in skills and knowledge required for the solution of problems of health and disease.
3. To provide standards of clinical practice and scientific investigation that will serve students as examples throughout their professional careers.

The primary aim of the School of Medicine is to provide an academic environment appropriate for the education of its students, including undergraduate medical students and graduate physician house officers and continuing education directed toward the needs of practicing physicians. In the classroom, laboratory, clinic and hospital, the faculty and students are brought

**1101 E. Marshall St. • P.O. Box 980565  
Richmond, VA 23298-0565  
(804) 828-9790 • Fax (804) 828-5115  
<http://www.medschool.vcu.edu>**

#### Heber H. Newsome

Professor of Surgery and Dean, School of Medicine (1970)

B.S. 1958 Wake Forest University  
M.S. 1962 and M.D. 1962 Tulane University

#### Craig E. Cheifetz

Assistant Professor and Assistant Dean for Medical Education (2002)

VCU School of Medicine – Inova Campus  
B.A. American University 1991  
M.D. 1995 State University of New York at Buffalo

#### Jan F. Chlebowski

Professor of Biochemistry and Associate Dean for Graduate Education (1979)

M.A. 1965 St. Mary's College  
Ph.D. 1969 Case Western Reserve University

#### Ralph R. Clark III

Assistant Professor of Internal Medicine and Associate Dean for Clinical Activities (1990)

B.S. 1983 College of William and Mary  
M.D. 1987 Virginia Commonwealth University

#### George D. Ford

Professor of Physiology and Assistant Dean for Sponsored Programs (1969)

B.S. 1961 and Ph.D. 1967 West Virginia University

#### William M. Gleason

Assistant Professor, Senior Associate Dean for Finance and Administration, and Associate Vice President for Health Sciences – Financial Affairs (1980)

A.B. 1969 University of North Carolina, Chapel Hill  
M.B.A. 1973 Indiana University

#### Carol L. Hampton

Associate Professor and Associate Dean for Faculty and Instructional Development (1987)

B.A. 1965 University of Arkansas  
M.M.S. 1969 Tulane University

#### Cynthia M. Heldberg

Assistant Professor and Associate Dean for Admissions (1986)

B.A. 1965 Brown University  
M.A. 1983 West Virginia College  
Ph.D. 1997 Virginia Commonwealth University

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**Sheldon Markowitz**

Associate Dean for Veterans Services  
M.D. 1968 Medical College of Virginia  
M.S. 1978 Virginia Commonwealth University

**Paul E. Mazmanian**

Professor of Preventive Medicine and  
Community Health and Associate Dean for  
Continuing Medical Education (1978)  
B.S. 1972 Wayne State University  
M.A. 1975 Michigan State University  
Ph.D. 1979 University of Michigan

**James M. Messmer**

Professor of Radiology and Senior Associate  
Dean for Medical Education (1981)  
B.A. 1968 Rockhurst College  
M.D. 1972 St. Louis University  
M.A. 1995 Virginia Commonwealth University

**Mary D. Nettleman**

Professor of Internal Medicine and Associate  
Dean for Primary Care (1996)  
B.S. 1977 Ohio University  
M.D. 1981 Vanderbilt University  
M.S. 1993 University of Iowa

**Robert P. Perry**

Associate Professor of Internal Medicine and  
Associate Dean for Graduate Medical Education  
(1979)  
A.B. 1972 Harvard University  
M.D. 1976 University of Rochester

**Hugo R. Seibel**

Professor of Anatomy and Neurobiology, and  
Associate Dean for Student Activities (1967)  
B.S. 1960 Brooklyn College  
Ph.D. 1967 University of Rochester

**Russell P. Seneca**

Professor and Associate Dean for Medical  
Education (2002)  
VCU School of Medicine – Inova Campus  
A.B. 1963 Providence College  
M.D. 1967 Georgetown University

together in teaching-learning experiences promoting scientific scholarship and personal growth in knowledge and professional skills.

The School of Medicine and its faculty have vested responsibilities for the advancement of knowledge through research and for service to the community through application of skills in health care leadership and patient care. Therefore, the school shares with teaching the interdependent and almost inseparable objectives of research and service.

## Faculty and facilities

The School of Medicine consists of 700 full-time faculty, including affiliates, assisted by 630 residents and fellows and over 700 clinical voluntary faculty. Programs of instruction and research are conducted on campus, at the McGuire Veterans Affairs Medical Center and at affiliated hospitals in an effort to expose the students to the variety of clinical disorders encountered in the eastern United States. The School of Medicine has established a geographically separate campus at the Inova Fairfax Hospital. Beginning in 2005, 24 third year students will take all their clinical clerkships at Inova Fairfax Hospital. Their fourth year elective program will also be based at the Inova Fairfax Hospital.

## Doctor of Medicine Program (M.D.)

### Admissions

The School of Medicine participates in the American Medical College Application Service. The AMCAS application forms can be obtained from AMCAS, 2450 N. St., N.W., Washington, D.C. 20037-1126. The electronic application is available at <http://www.amcas.org>. Updated information is available at the School of Medicine Web site: <http://www.medschool.vcu.edu>.

Application for the School of Medicine should be made on or after June 1 of the year preceding intended matriculation. Updated information is available on the school's Web site: <http://www.medschool.vcu.edu>. The closing date for filing applications for this institution is Nov. 15 of the year preceding the enrollment date. Priority for admissions is given to Virginia residents. Members of minority groups under-represented in medicine are especially encouraged to apply to the School of Medicine. Students previously dismissed from a medical school will not be considered. All applicants must be U.S. citizens or permanent residents of the United States at the time of application.

A nonrefundable \$80 application fee and supplemental information, including faculty recommendations, will be required with all applications accepted for further consideration. The final date for returning supplemental information is Dec. 1 of the year preceding possible enrollment in the School of Medicine.

The School of Medicine will not admit students from other health sciences schools

at VCU until such students have completed the degree program for which they are enrolled.

The School of Medicine participates in the Early Decision Plan. This program permits an applicant to file a single application through AMCAS on or after June 1 but prior to Aug. 1. All applicants filing under the Early Decision Plan will receive consideration for admission and a response on or before Oct. 1. All applications for the Early Decision Plan must be supported by the results of the new MCAT test at the time the application is made.

The early notification date of this plan ensures that those who are unsuccessful have ample time to request further distribution of their applications to other medical schools. Further information on the Early Decision Plan is available at <http://www.aamc.org>.

### Requirements for entrance

The MCAT is required as part of the application. It is necessary that the test be taken no later than the fall of the year of application since selections will be complete before the spring test is given in the year of admission. This test is produced by the American College Testing Program, P.O. Box 414, Iowa City, IA 52240, and is administered in colleges and universities throughout the country. Information about the MCAT is available through premedical advisers or directly from the American College Testing Program.

Applicants may be admitted on the basis of 90 semester-hours of outstanding achievement; however, the majority of students admitted are completing their baccalaureate programs. The college major for premedical students should be selected in accordance with the individual student's aptitude and interest. The prerequisites for the School of Medicine have been reduced to a minimum in order to permit the widest possible latitude in preparation for medical education.

Prerequisites for admission include a minimum of 90 semester hours (or the equivalent) in a U.S. or Canadian college or university accredited by the regional accrediting agency. This program of study must include a minimum of:

1. English – two semesters (one semester to include grammar and composition),
2. college mathematics – two semesters,
3. biological science (eight semester hours) including laboratory experience. This requirement may be satis-



fied by general biology, general zoology or botany. No more than half may be botany,

4. general or introductory chemistry (eight semester hours) including laboratory. An appropriate portion of this requirement may be met by courses in analytical chemistry or physical chemistry,
5. organic chemistry (six semester hours) including laboratory. This course should be equivalent to and acceptable for continued studies in a chemistry major, and
6. general or introductory physics including laboratory experience (eight semester hours).

Students are encouraged to pursue their own intellectual interests in college in order to obtain a broad education consistent with their major program. Courses in medically related science areas will not relieve the student of his/her responsibility for these subjects in the medical curriculum.

## Selection factors

Demonstrated academic ability, as well as attributes of character and personality, are of significance to the admissions committee in the selection process. A review of academic achievement as represented by the standard academic record and summaries, MCAT scores, evaluations and interviews are all sources of information on which the comparative evaluation process is based. A review of the completed application file and interviews with members of the admissions committee are an integral part of the admissions process.

Noncognitive variables also are sought in all candidates. These qualities include, but are not limited to, health care experience, community service and social concern, communication skills both written and oral, leadership, ethical and moral behavior, creativity, compassion and empathy, altruism, personal maturity, self-confidence without arrogance, appropriate motivation, the ability to realistically self-appraise, and a demonstrated ability to work as a team member. These qualities and characteristics are judged by references within the letters of recommendation and from a careful review of the student's essays and extracurricular activities, as well as the interviewers' assessment during the interview.

The School of Medicine hopes to create a learning environment where students will meet colleagues whose life experiences and views differ significantly from their own. A physician must be at home and at ease in a

wide variety of environments and with a wide variety of people. Students frequently comment that the aspect of the school they appreciate most is the diversity of their class. The admissions process seeks to foster that diversity of perspective and background by admitting students from a wide range of backgrounds socioeconomically, culturally, geographically and educationally.

The interview is an opportunity for the applicant to become acquainted with the institution and it offers additional information for the selection process. Only on-campus interviews in Richmond are available. Each year more applicants are interviewed than can be accepted in the class. Therefore, an interview is not an indication of acceptance to the School of Medicine.

Offers for admission are made as previously indicated in the Early Decision Plan and on the uniform acceptance date of Oct. 15, with admissions occurring at several points thereafter until the class selections have been completed. At the time the class is filled, an alternate list of applicants is compiled from which replacements are drawn for any vacancies which may occur in the selected class between notification and the third week of class attendance. Since selections are made in advance of actual attendance, all acceptances are made on condition of satisfactory completion of courses planned or in progress. It is expected that candidates will maintain acceptable standards of deportment and ethical behavior. Students offered acceptance into a class are expected to respond within two weeks of the offer. If such a response presents a problem, extension of the time for the response should be requested.

The enrollment of accepted candidates is considered complete only after payment of the \$100 deposit towards the first tuition payment. This deposit will be returned to the candidate should withdrawal occur prior to May 15 of the year of attendance. By the act of matriculating in the School of Medicine, the student accepts the responsibilities related to this opportunity and agrees that during the time that he/she is a registered student he/she will follow the rules and regulations established by the governing bodies of the School of Medicine and the university.

## Transfer in advanced standing

Advanced standing admission is open only to students who have not previously been dismissed from any medical school

and who are in good standing in LCME-accredited American or Canadian medical schools. Transfers are only at the third-year level and are limited in number each year. Interested students should request information between Jan. 1 and Jan. 15 of the year they wish to transfer. Such individuals must pass Step I of the U.S. medical licensing examination prior to matriculation.

Application materials and further information may be obtained by writing to Admissions, School of Medicine, Virginia Commonwealth University, P.O. Box 980565, Richmond, VA 23298-0565.

U.S. citizens in foreign medical schools recognized by the World Health Organization may apply for admission only to the first-year class through AMCAS.

## Curriculum

The program for the M.D. degree is divided into four phases, each of a year's duration. Medicine I, occupying the first year (mid-August to early June), emphasizes normal human structure, function, growth and development. Medicine II, occupying the second year (August to June), stresses the abnormal. Medicine III occupies the third year (July to July) and consists of clinical education and training. Medicine IV, lasting from August to mid-May, consists of approximately one-third required clinical education and training and approximately two-thirds electives at the VCU Health System's Medical College of Virginia Hospitals and at approved medical schools elsewhere in the United States and abroad. Elective opportunities also are offered in M-I and M-II.

School of Medicine students begin their clinical exposure in the first month of medical school in the Foundations of Clinical Medicine course. This longitudinal experience runs throughout the first two years and consists of one afternoon session per week in a private primary-care physician's office alternating with one afternoon per week in a small group session. This course gives the student the opportunity to learn the clinical relevance of basic science material and to work with a primary-care role model. The course provides a fundamental understanding of the skills necessary for all clinical disciplines.

**Registration in courses offered by the School of Medicine is restricted to students enrolled in the School of Medicine at VCU.**

## Medicine I, II and III

The curriculum is viewed as a dynamic and evolving entity, and courses, titles, content or duration of emphasis may be subject to modification for the sake of improving the learning experience.

Each course in M-I and M-II is designed and implemented by the faculty, and each year of the curriculum is supervised by a faculty coordinator. In M-III, a committee under a coordinator supervises the clinical experiences, and in M-IV there is an electives committee whose chair is the M-IV coordinator.

### Medicine I

#### Course

Medical biochemistry  
Histology  
Gross and developmental anatomy  
Physiology  
Human genetics  
Behavioral sciences  
Population medicine  
Neurosciences  
Foundations of clinical medicine  
Immunology  
Medical ethics

### Medicine II

#### Course

Pathogenesis  
Microbiology  
Preventive medicine  
Pharmacology  
Hematology-oncology  
Gastrointestinal  
Central nervous system  
Behavioral sciences  
Respiratory  
Cardiovascular  
Renal  
Musculoskeletal-dermatology  
Endocrine  
Women's health  
Foundations of clinical medicine  
Medical Ethics

### Medicine III

#### Rotation

Internal medicine  
Surgery  
Pediatrics  
Obstetrics/gynecology  
Psychiatry  
Neurology  
Family practice  
M-III workshop

### Medicine IV

The School of Medicine, in an effort to best serve the needs and goals of the indi-

vidual student, offers M-IV students the option of choosing electives during two-thirds of their senior year. The elective curriculum has been arranged primarily to allow those students who have definite goals to pursue them logically without adherence to a required curriculum. At the same time, it allows those who have not yet defined their goals an adequate assortment of electives with which to explore career options. Where standard elective choices seem too limiting, students are encouraged to approach individual faculty members relative to the development of unique courses that more closely approach individual needs. A member of the M-IV Committee is available to advise each student and to approve each student's program.

The year is divided into nine four-week periods. The required rotations which must be served at the MCV Campus are an acting internship and completion of the Update of Basic Sciences and Clinical Medicine course. The first month of M-IV is divided into a two-week required Step II board review course and a two-three week vacation.

An updated electives catalog is available on the School of Medicine Web site.

**All students are required to take the U.S. Medical Licensing Examination Step I prior to the start of M-III and Step II in the fall of M-IV. Any exceptions to this requirement must be approved by the senior associate dean for medical education.**

### Graduate medical education

Clinical training leading to qualification for certification by the American specialty boards is offered in the following programs: general surgery, vascular surgery, thoracic surgery, urology, allergy and immunology, anesthesiology, clinical genetics, dermatology, emergency medicine, family practice, internal medicine, neurosurgery, neurology, child neurology, obstetrics/gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, forensic pathology, neuropathology, pediatrics, pediatric cardiology, pediatric allergy and immunology, pediatric hematology and oncology, nuclear medicine, neonatal-perinatal medicine, physical medicine and rehabilitation, plastic surgery, psychiatry, diagnostic radiology, radiation oncology, therapeutic radiology, oral surgery, public health and preventive medicine.

Programs sponsoring a PGY-1 year (internship) are internal medicine, surgery, family practice, obstetrics/gynecology,

pathology, pediatrics, anesthesiology, psychiatry, diagnostic radiology and neurology.

Requests for further information should be directed to the program of interest or the Associate Dean for Graduate Medical Education, School of Medicine, Virginia Commonwealth University, P.O. Box 980257, Richmond, VA 23298-0257.

## Continuing education

### Mission statement

The primary goal of the Office of Medical Education VCU is to provide continuing educational experiences specifically designed to enhance the delivery of high quality patient care by physicians and other health care professionals in Virginia and other states. The philosophy of continuing medical education is based on the belief that learning must be viewed as a lifelong process. In past generations, the graduating physician was able to look upon an acquired knowledge base as a reasonably stable resource for practicing medicine. However, today's rapidly expanding load of scientific information forces a continuing learning effort upon the physician. Undergraduate and graduate medical education alone can no longer offer reasonable assurance that practitioners are armed with the knowledge, attitudes and skills that will enable them to render optimal, achievable patient care throughout their careers. Continuing education is now linked with undergraduate and graduate education to complete the continuum of medical education.

The goal and philosophy stated herein undergird and lend direction to the effort of the Office of Medical Education as it engages in a diversity of educational and education-related activities. Specifically, the Office of Medical Education works in concert with the faculty of the School of Medicine as well as other individuals and organizations as appropriate, to:

1. coordinate a state-wide continuing medical education program for several networks of affiliate hospitals,
2. organize the Virginia Hospital Television Network and provide continuing education programs for physicians and other health professionals directly into hospitals statewide, using satellite and audio-conferencing,
3. develop and deliver a series of short courses, clinical workshops, seminars, international medical study tours and

- conferences for physicians and other health professionals,
4. provide clinical refresher courses and make readily available self-learning materials and methods,
  5. conduct research to improve the process of continuing medical education, and
  6. improve the education of the general public in the proper use of health care resources.

Fostering an appreciation for the concept of lifelong learning in undergraduate and graduate medical school programs is a challenge that is now being confronted by medical schools throughout the nation. During these critical years, the attitudes of medical students toward continuing pursuits of learning are molded and developed. In order to encourage undergraduate and graduate students at VCU to embrace the concept of lifelong learning, the Office of Medical Education actively seeks their involvement in its various programs and activities. Brochures, posters and a yearly catalog are utilized to announce pending events.

Further information may be obtained by writing the Assistant Dean for Continuing Education, School of Medicine, Virginia Commonwealth University, P.O. Box 980048, Richmond, VA 23298-0048.

## Office of Medical Alumni Relations

The Office of Medical Alumni Relations was established to develop and enhance the School of Medicine's interaction with its alumni. A School of Medicine newsletter, first published in 1987, provides a direct communication link between the school, its departments and its alumni. All alumni are encouraged to keep the office informed of personal news for publication. The office and its staff are available to alumni for information, advocacy and assistance in their contacts with the school and its departments. Staff also will coordinate the new Bed and Breakfast Program for students on residency interviews. Additional student/alumni opportunities will be developed.

The office welcomes ideas and suggestions from all alumni and students at any time. For further information, contact Director, Office of Medical Alumni Relations, School of Medicine, Virginia Commonwealth University, P.O. Box 980290, Richmond, VA 23298-0290; telephone (804) 225-3578.

## Office of Development

The Office of Development was established to secure private philanthropic support for the School of Medicine. This office is responsible for the identification, cultivation and solicitation of major gifts to the school from individuals, corporations and foundations. The office works closely with the school's Office of Medical Alumni Relations, the MCV Hospitals' Office of Development of VCU, the MCV Foundation and the University Advancement Office.

Gifts to the university may be restricted to the School of Medicine by making a gift to the Medical College of Virginia Foundation and designating it for any of the variety of purposes that fall within the scope of the school's activities. Gifts may be made **in their entirety**, pledged over a period of years, or made through any one of several planned gift mechanisms, which allow for the return of income to the donor after the gift is made.

The Office of Development also helps coordinate several donor recognition events and assists in maintaining contact with past donors to the School of Medicine.

Further information may be obtained by writing to Director, Office of Development, School of Medicine, Virginia Commonwealth University, P.O. Box 980022, Richmond, VA 23298-0022, or by calling (804) 371-7451.

## Annual lectureships

The Department of Pediatrics annually sponsors a medical education program and the Sutton Lecture in honor of the late Dr. Lee E. Sutton Jr., who was chair of the department from 1938 to 1958 and dean of the medical school from 1929 to 1942.

The annual Kinloch Nelson Medical Students Honors Day, sponsored by the American Medical Student Association and Alpha Omega Alpha, was designated as an expression of appreciation for the leadership Dr. Nelson provided during his tenure as dean of the School of Medicine from 1963 to 1971.

The Sanger Lecture was established and endowed by the late Dr. Harvey B. Haag, professor and chair of the Department of Pharmacology and dean of the School of Medicine from 1947 to 1951, as a tribute to Dr. William T. Sanger for his dedication and service to the institution. Dr. Sanger served as president of MCV from 1925 until 1956, chancellor from 1956 to 1959, and chancellor emeritus from 1959 until his

death in 1975. The lectureship annually offers topics of current interest in the area of science and ethics to the university and the Richmond community.

The annual Charles W. Thomas Lectureship began in 1971 honoring Dr. Thomas, whose bequest of one million dollars led to the establishment of the Charles W. Thomas Arthritis Research Unit for research and education in the area of arthritis, a disease from which he suffered. A graduate of the Medical College of Virginia, class of 1903, Dr. Thomas was a native of Patrick County, Va., and practiced medicine in the state for over 50 years.

In 1973, former residents in obstetrics and gynecology from the Medical College of Virginia of VCU, through their organization, the H. Hudnall Ware Jr. Society, established the H. Hudnall Ware Jr. Visiting Professorship in honor of H. Hudnall Ware Jr. M.D., who was professor of obstetrics and gynecology from 1942 to 1967. The visiting professorship is combined with a two-day postgraduate continuing education program which provides information regarding recent advances in obstetrics and gynecology.

The John Hoover Moon Memorial Lectureship was established in 1972 as a tribute to John Hoover Moon, M.D., professor of medicine, for his outstanding contribution to teaching and research. A graduate of the School of Medicine, 1949, he was the first clinical research fellow in the Division of Hematology. His research interests centered around the chemotherapy of malignant disease. The John Hoover Moon Memorial Foundation makes this annual lectureship possible.

The Carolyn and Howard McCue Lectureship was initiated Sept. 22, 1987, to honor both of these physicians. The annual one-day lectureship alternates each year with pediatric and medical speakers. It is supported by gifts from family, residents, fellows and friends through the Medical College of Virginia of VCU Foundation.

In recognition of long and brilliant service to the Medical College of Virginia, the Board of Visitors established the annual Stuart McGuire Lectureship on May 27, 1929. Dr. McGuire (1867-1948) served as professor of surgery, dean, president and chair of the Board of Visitors during his lifetime. The lecture series offers topics primarily in surgery.

The annual Stoneburner Lecture Series was initiated in 1946 in memory of Dr. Lewis T. Stoneburner III, by his comrades in the 45th General Hospital, U.S. Army.

Dr. Stoneburner graduated from MCV in 1937 and died in 1943 while serving his country as an army officer in North Africa. The lectures annually offer topics of current interest in medicine.

### **Combined M.D. and M.S. or Ph.D. programs**

The School of Medicine encourages applications from individuals interested in the Combined M.D./Ph.D. Program. This program provides superior preparation for a career in academic medicine or medical research. The program has successfully trained independent medical research scientists and academicians.

Students interested in this combined-degree program must be accepted by both the M.D. program and one of the Ph.D.-granting programs within the School of Medicine. The application process is simplified by acceptance of MCAT, references and transcripts used in applying to the School of Medicine. Students in the combined-degree program are given credit for basic science instructions received in the first years of medical school. Summers and elective time during these years provide excellent opportunities to begin research training. Almost the entire fourth year may be devoted to graduate school education.

The minimum requirement in addition to the first three years of medical school is one year for the master of science and two years for the doctor of philosophy degree. Because the medical school curriculum provides a very broad-based background, combined-degree students are required to take few, if any, introductory-level graduate courses. Graduate school courses should provide in-depth education in one discipline.

Students are advised to declare their research interest in the first academic years because the use of elective and summer time may be critical in their individual schedules. For additional information, students may contact the School of Medicine Admissions Office.

### **Combined M.D./Ph.D. and M.D./M.H.A. programs**

The School of Medicine has joint programs combining the M.D. degree with the master of public health degree offered by the Department of Preventive Medicine and Community Health (School of Medicine) or the master of health administration degree offered by the Department of Health Administration (School of Allied Health

Professions). The master's level programs typically include a combination of didactic and practical experience lasting one year. For the M.H.A. degree, course work extends into a second year and is taken during the final year of the M.D. program. Students may indicate their interest in either combined program prior to matriculation or during the first two years of the M.D. program. Availability of training in either master's program may be limited.

Students interested in either program may contact the School of Medicine Office of Curriculum or (as appropriate) the Department of Health Administration (School of Allied Health Professions) or the Department of Preventive Medicine and Community Health (School of Medicine).

### **Grading and promotions**

Each student's progress toward his/her objectives is evaluated by examination upon each subject matter and by national board examinations at appropriate times. Grades are assigned on the honors, high-pass, pass, marginal or fail basis. Students receiving marginal or failing grades are counseled. All students are assigned a faculty adviser, available to the student throughout the four years of study.

Students who have attained satisfactory grades in M-I and M-II, but who do not pass U.S. Medical Licensing Examination Step I, may receive time to study the basic medical sciences during the third school year, prior to their repeating the Step I examination. These students will use part of their fourth year to complete the segments omitted during the study time.

At the close of each academic year, the Promotions Committee, composed of department chairs, recommends to the dean which students have achieved the objectives of the year and which students are qualified for either promotion or graduation. The Promotions Committee is charged to give careful individual attention to all aspects of student achievement, effectiveness, behavior and attitude. The committee is charged not to promote any student who has failed to meet the requirements of the preceding year, or who appears unfit for the practice of medicine. When the committee determines by majority vote that a student will not be promoted, it then recommends to the dean remedial activities or dismissal in instances where no remedy is perceived. The dean reviews the recommendations and promptly notifies students that they have been promoted, have to

repeat a year or have been dismissed. A student repeating the year is expected to show significant improvement. The Promotions Committee also will meet each January to review the status of all senior students, all third-year students and M.D./Ph.D. candidates. Furthermore, the committee will review any other students in serious academic difficulty and may, at this meeting, choose to take final action, including dismissal, on such students.

An Appeals Committee of three senior faculty will hear appeals of dismissals when such are filed in writing within 14 days of the student's notice of dismissal. A student also may appeal a decision to repeat a year, but such appeals will be reviewed by the Appeals Committee only when it is found that the student will present information not previously available to the Promotions Committee. A student appealing has the right to appear before the Appeals Committee and to have an adviser participate. The dean of the School of Medicine will act upon the recommendation of the Appeals Committee within 14 days of receipt of the committee's recommendation.

### **Withdrawal**

A student may not withdraw from school prior to completion of an academic year unless granted a leave of absence by the dean. A student who leaves without such permission or who fails to return by the end of the granted term of leave is considered dismissed from the class and may return only by applying for possible re-admission. Where such a student has demonstrated any academic deficiency, the application is presented to the Promotions Committee.

### **Requirements for graduation**

The degree of Doctor of Medicine will be conferred by VCU upon candidates who, in the opinion of the medical faculty, have:

1. attained the school's educational objectives as evidenced by satisfactory completion of prescribed courses and examinations, by proven clinical skills and responsibilities, and by ethical standards,
2. taken step II of the U.S. Medical Licensing Examination in the fall of M-IV or before graduation (April of the M-IV year),
3. attended the School of Medicine for a minimum of two years, one of which must be an academic year of clinical rotations, and

4. discharged all financial obligations to the university.

It is the policy of the School of Medicine that candidates must be present at commencement exercises unless excused by the dean.

## Student participation

The dean and faculty solicit the advice of students in conducting the affairs of the medical school. Student officers elected by their classes meet with deans and curriculum coordinators. At these meetings, each phase of the curriculum and any other matters of concern to students are discussed in detail. Each class also elects representatives to the faculty committees which design its curriculum. Students are selected by the dean and the faculty to serve on the Admissions Committee, on faculty tenure committees, and on committees to recommend appointment of deans. A continuing effort is made to improve methods for student evaluation of teaching technique. All students are welcome to visit the deans, teachers and faculty advisers at any time to volunteer opinions or seek explanations of procedures employed by the school.

## Student fellowships

Opportunities are available for study and investigation under the tutelage of faculty members in their laboratories during the summer vacation and as an extracurricular activity during the school year.

These studies are supported by the School of Medicine Summer Research Fund.

The Robert C. Bryan Summer Fellowship in Pathology was given by Mr. Jonathan Bryan in memory of his father.

The Arthur T. Lyman Fellowship in Pathology is awarded to an outstanding student participating in the summer fellowship program. This fellowship represents a gift from Mrs. Fairfield Goodale in memory of her father.

## Financial assistance

A general description of financial aid based on demonstrated need is contained in the Professional Studies at VCU chapter of this bulletin. Financial need-based aid programs available to medical students include Health Professions Student Loan, Commonwealth of Virginia Medical Scholarship, Norfolk Foundation Scholarship, Lincoln/Lane Foundation

Scholarship, and various institutional loans and grants.

Information on the Commonwealth of Virginia Medical Scholarship and the other programs may be obtained from the financial aid officer in the Office of the Associate Dean of Student Activities, School of Medicine.

## U.S. Armed Forces scholarships

The Army, Navy or Air Force provides up to four years of paid tuition and fees, books and supplies allowance, and a stipend in exchange for military service after graduation. Normally, the recipient serves one year on active duty for each year of scholarship, with a minimum service of three years. Additional information may be obtained from local armed services recruiting offices.

## Honors and prizes

Student research and honors day is held in May. Begun by the American Medical Student Association, it is now a joint effort of that organization, the Alpha Omega Alpha honorary scholarship society, and the medical school. Honors and prizes in the medical school include:

**Alpha Omega Alpha.** The Brown-Sequard Chapter, established at MCV in 1940, elects to membership each year senior and junior students who have demonstrated outstanding academic achievement as evidenced by cumulative ranking in the upper one-fourth of the class. Membership is limited to a maximum of one-sixth of each class.

**Sigma Xi.** Seniors of high scholastic achievement who show promise of success in research may be elected to associate membership in the VCU chapter of this national honorary scientific society.

**Sigma Zeta.** Outstanding members of the junior and senior classes of the schools of Medicine, Dentistry, Pharmacy and Nursing are elected to this honorary scientific society.

**L. Beverly Chaney Scholarship.** For responsible leadership during the first three years of medical school, a senior scholarship of \$5,000 from the Joseph Collins Foundation in memory of its trustee, Dr. Chaney, who graduated from the School of Medicine in 1918.

**Isaac A. Bigger Medal.** A medal awarded annually to a surgical resident for integrity, leadership, teaching and clinical ability, in memory of Dr. Bigger, professor of surgery from 1930 to 1955.

**Lee E. Sutton Jr. Prize.** Awarded to a senior student for excellence in pediatrics, in memory of Dr. Sutton, professor of pediatrics from 1938 to 1958, and dean from 1929 to 1942.

**Robert C. Bryan Prize.** For excellence in sophomore pathology, an annual award is made in memory of Dr. Bryan, professor of urology from 1917 to 1934.

**Aubrey H. Strauss Prize.** For excellence in sophomore microbiology, an annual award is made in honor of Dr. Strauss, assistant professor of microbiology from 1909 to 1924.

**H. L. Osterud Award.** The Osterud Award was established to honor the memory of Dr. Hjalmer L. Osterud, an exceptional teacher, administrator, and scholar who was professor and chair of the Department of Anatomy from 1922 to 1953. The award is made to a graduate student who has distinguished himself/herself academically, in his/her research as well as in service to the educational mission of the Department of Anatomy.

**Outstanding Pathology Graduate Student.** A prize is awarded to the pathology graduate student showing the most promise of success in research.

**A. D. Williams Award.** Awards are made to a student in each of the first three years of medical school for outstanding academic achievement.

**Henry Clay Smith Scholarship.** Given in memory of Dr. Henry Clay Smith, a graduate of MCV, to two M-III students most likely to emulate Dr. Smith by careers of service to the health needs of rural Virginia. Selections made by the Department of Family Practice.

**Medical Society of Virginia.** Given by the Medical Society of Virginia on the basis of financial need and academic excellence.

**Southern Medical Association.** Given by the Southern Medical Association to an M-III student on the basis of financial need and academic excellence.

**Richard Kirkland Scholarship.** Given by the Richard Kirkland Scholarship Fund to an M-II student on the basis of financial need and academic excellence.

**A. H. Robins Scholarship.** Given on the basis of financial need and academic excellence.

**Hoak Scholarship.** Given on the basis of financial need and academic excellence.

**Sidney B. Barham Scholarship.** Given in memory of Dr. Sidney B. Barham Sr. Used for scholarships to deserving medical students elected by the college administration.

**Merck Manual.** Current edition of the Merck Manual donated by the Merck Company. Four awards given.

**McGraw Hill – Lange Award.** First-year students receive a selection card and choose four books from the offered selection. Two awards are given.

**Elizabeth Joanne Harbison Award.** Given for performance during the M-III pediatric clerkship and M-IV pediatric electives. This award is restricted to students entering the field of pediatrics.

**Eric C. Schelin Award.** For outstanding work in the OB/GYN department based on academic and clinical achievement. The department provides a monetary award and the name inscribed on a plaque in the Department of Obstetrics and Gynecology.

**Harry Walker Award.** Given to a student for outstanding performance on the M-II Introduction to Clinical Medicine course. The recipient of this monetary award is selected by a committee from the Alumni Association.

**A. J. and Lee Pardoll Endowed Scholarship.** This endowed scholarship given by Peter M. Pardoll, M.D., 1971, in memory of his parents, provides a \$1,000 scholarship award for a student entering the second year of study and is based on financial need and academic achievement. Priority is given first to students from Florida and then to non-Virginia residents.

**A. Jarrell Raper Memorial Scholarship Fund.** Given in memory of Dr. A. Jarrell Raper, a graduate of MCV, to minority students on the basis of financial need.

**Elise H. and Wesley Wright Jr. Endowed Scholarship.** Given to a Princeton University graduate on the basis of financial need.

**W. Donald and Anne Tucker Moore Scholarship.** Given to a second-year student from North Carolina on the basis of financial need and academic excellence.

**Seymour Schotz Scholarship.** Given to a second-year student on the basis of financial need.

**Susan Mellette Scholarship and Fellowship Fund.** Given to students who have demonstrated interest and achievement in oncology and on the basis of academic credentials.

**Paul Dunn Scholarship.** Given to a third-year student on the basis of financial need and specialty choice.

**Kinloch Nelson Scholarship Award.** Given on the basis of demonstrated leadership ability, academic accomplishment and financial need.

**William Wallen Meyer Scholarship.** Given on the basis of academic achievement.

**Walther Riese Award in Neuroanatomy.** The Riese Award was established to honor the memory of a truly devoted physician, professor, researcher and humanitarian. Riese was a professor of neurology and psychiatry at the Medical College of Virginia from 1947 to 1960. The award is made to a student who has distinguished himself/herself academically in the neurosciences.

**Jack Denning Burke Award in Cell Biology.** The Burke Award was established to honor the memory of Dr. Jack Denning Burke, professor in the Department of Anatomy from 1964 to 1978, a truly great teacher and scientist, and author of a textbook in the field of cell biology. The award is made to a student who has distinguished himself/herself academically in histology/cell/molecular biology.

**The Edith E. and Hugo R. Seibel Award for Excellence in Gross Anatomy.** Established in honor of Dr. Hugo R. Seibel, Professor of Anatomy and Neurobiology, 1967-2004. The award honors the outstanding medical student(s) in the discipline of Gross Anatomy each academic year. The students are selected on the basis of scholarship only.

**H. Vaughan and Maragret D. Belcher Scholarship Fund.** Given to students with financial need.

**Charles Boatwright Scholarship.** Given to an incoming student for two years, with preference for residents of Southwest Virginia.

**Linda and Richard Costanzo Scholarship.** Given to a rising second-year student who has demonstrated academic excellence and need.

**Lillian Ding Scholarship.** Criteria include academic excellence, financial need and extracurricular volunteerism.

**Harriet and Harry Grandis Family Scholarships.** Students must be in the top ten percent of the medical school applicant pool for financial aid.

**Mickael M. Kannan Pediatrician Teaching Award and Student Scholarship.** Awarded to third- and fourth-year students with an interest in Pediatrics.

**Nancy King Scholarship.** Awarded to third- and fourth-year students with an interest in Pediatrics.

**MCVF Medical Scholarship.** Given to rising fourth-year students based on academic excellence.

**Kinloch Nelson Scholarship Fund.** Awarded to third- and fourth-year students

who have demonstrated leadership ability and financial need.

**William Edward Newby, M.D., Scholarship.** One year scholarship based on academic excellence and financial need. Preference given to graduates from the University of Richmond.

**Georgiann and Gertrude Partridge and Simon Russi Scholarship.** Awarded on the basis of academic excellence and financial need.

**Anne Marie and Jonathan Seth Perel Medical Scholars Fund.** Awarded to first-year students and is renewed annually based on continued academic excellence.

**Thomas and Mary Shaia Family Scholarship Fund.** Awarded to a rising third- or fourth-year student with an interest in private practice, based on financial need and academic merit.

**Drs. H.D. and P.P. Taliaferro Fund.** Awarded on the basis of financial need.

**Theresa Thomas Health Professional Scholarships.** Awarded to students interested in primary care.

**Dr. Elbert P. Whited Scholarship Fund.** Awarded to students from Southwestern Virginia with an interest in primary care on the basis of academic ability and financial need.

## **Graduate degree programs (Ph.D., M.S., M.P.H., Certificate)**

The School of Medicine offers a diversity of advanced degree training programs leading to the doctor of philosophy, master of science, specialized master's and certificate degrees. Advanced degree training is coordinated through the Office of Graduate Education. Ph.D. and M.S. training is conducted through programs formally housed in the departments of Anatomy and Neurobiology, Biochemistry, Biostatistics, Human Genetics, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, and Physiology.

Interdisciplinary curriculum tracks in immunology, molecular biology and genetics, neuroscience, and structural biology are available through participating departments. Specialized programs at the master's level, the master of public health and the master of genetic counseling also are offered in the Department of Preventive Medicine and Community Health and the Department of Human Genetics, respectively. Additional interdisciplinary training programs in anatomy or physiology/physical therapy and combined degree programs (M.D./Ph.D.,

D.D.S./Ph.D., M.D./M.P.H.) are administered in the School of Medicine.

Contact information for the various programs and departments is listed:

#### **Anatomy and neurobiology**

Dr. John Povlishock, Chair; Contact Dr. Leichnetz, (804) 828-9512

#### **Biochemistry**

Dr. Sarah Spiegel, Chair; Contact Dr. Van Antwerpen, (804) 828-3506; hgvanant@vcu.edu

#### **Biostatistics**

Dr. W. H. Carter, Chair; Contact Dr. Elswick, (804) 828-9824

#### **Human genetics**

Dr. Peter O'Connell, Chair; Contact Dr. Shiang, (804) 828-9632; shiang@hsc.vcu.edu

#### **Microbiology**

Dr. Dennis Ohman, Chair; Contact Dr. Cabral, (804) 828-2306

#### **Pathology**

Dr. David Wilkinson, Chair; Contact Dr. Holt, (804) 828-4802; seholt@hsc.vcu.edu

#### **Pharmacology**

Dr. Billy Martin, Chair; Contact Dr. Sawyer, (804) 828-8400; ssawyer@hsc.vcu.edu

#### **Physiology**

Dr. Margaret Biber, Chair; Contact Dr. Ford, (804) 828-9557

#### **Preventive medicine**

Dr. Tilahun Adera, Chair; Contact Ms. Bryant, (804) 828-9785

#### **Genetic counseling**

Contact Ms. Vanner-Nicely, (804) 828-9632; lvanner@hsc.vcu.edu

#### **Molecular biology and genetics**

Contact Dr. Christie, (804) 828-9093; christie@gems.vcu.edu

#### **Immunology**

Contact Dr. Tew, (804) 828-9715; tew@gems.vcu.edu

#### **Neuroscience**

Contact Dr. Satin, (804) 828-7823; lsatin@hsc.vcu.edu

#### **M.D./Ph.D.**

Dr. Gordon Archer, Director; Contact Ms. Sorrell (804) 828-9711, ssorrell@vcu.edu

The School of Medicine also offers a didactic postbaccalaureate program for students seeking preparation for entry into medical school. The two-semester certificate program offers advanced basic science training in six disciplinary areas (anatomy, biochemistry and molecular biophysics, human genetics, microbiology and immunology, pharmacology and toxicology, and physiology).

### **Master of Public Health**

The graduate program in public health is offered through the Department of Preventive Medicine and Community Health of the School of Medicine and leads to the Master of Public Health degree. The

M.P.H. program is closely linked with regional and state public health agencies to enhance the student's appreciation and understanding of applying public health principles to practice. Information on admission and course requirements, and application forms for admission may be obtained by writing to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051, or to the Director of the M.P.H. Program, Department of Preventive Medicine and Community Health, School of Medicine, Virginia Commonwealth University, P.O. Box 980212, Richmond, VA 23298-0212.

## **Course descriptions**

### **Courses in anatomy and neurobiology (ANAT)**

#### **ANAT 301 Head and Neck Anatomy for Dental Hygienists**

2 lecture and 1 seminar hours. 3 credits. Prerequisite: Admission to the Dental Hygiene Program. An overview of head and neck anatomy that examines the major osteological, neural, muscular, vascular and visceral features. Lectures will be supplemented by textbook, self-study packages and by brief laboratory exercises that provide hands-on exposure to these major anatomical features.

#### **ANAT 302 Microscopic Anatomy (Dental Hygiene)**

Semester course; 2 lecture hours and 2 laboratory hours. 3 credits. A lecture course in the microscopic anatomy of general body tissues and the oral cavity.

#### **ANAT 501 Gross Anatomy (Dentistry)**

Semester course; 5.5 lecture and 8 laboratory hours. 7 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

#### **ANAT 502 Microscopic Anatomy (Dentistry)**

Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the normal tissues and organs of the human body at the microscopic level, with emphasis on the histological organization and development of the oral cavity.

#### **ANAT 503 Neuroanatomy (Dentistry)**

Semester course; 1.5 lecture hours. 1.5 credits. This course provides the student with a broad exposure to the field of neuroanatomy. The structure and connections of the brain and spinal cord are stressed to prepare the student for dealing with physiological, pharmacological, and clinical aspects presented in other courses.

#### **ANAT 505 Principles of Human Anatomy (Pharmacy)**

Semester course; 2.5 lecture and 1.5 laboratory hours. 3 credits. The structure of the human body is surveyed by studying micro-, neuro-, and gross anatomy.

Emphasis is placed on basic concepts and their application to various body components.

#### **ANAT 509/PHIS 509/PHXT 509 Introduction to Neuroscience**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

#### **ANAT 525 Advanced Functional Anatomy (Occupational Therapy)**

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisites: BIOL 205 or equivalent and permission of the instructor. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Emphasis is placed on the study of the extremities, particularly the hand.

#### **ANAT 529 Advanced Functional Neuroanatomy (Occupational Therapy)**

2 lecture and 2 laboratory hours. 3 credits. Prerequisites: ANAT 525 and permission of instructor. A study of the morphological and functional aspects of the central and peripheral nervous systems of the human body with particular emphasis on motor activity.

#### **ANAT 609 Gross and Developmental Anatomy**

Semester course; 4 lecture and 10 laboratory hours. 9 credits. A dissection and macroscopic study of the human body, with clinical correlations.

#### **ANAT 610 Neuroanatomy**

Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the structure, connections and function of the central nervous system. Laboratory sessions complement lecture presentations, emphasizing light microscopic and ultrastructural neurohistology, gross and sectional anatomy of the brain, and tracing of functionally related CNS connections.

#### **ANAT 611 Histology**

Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the basic light and electron microscopic structure of cells, tissues, and organs. Emphasis on correlating structure with function.

#### **ANAT 613 Advanced Studies in Anatomy**

1-6 credits. An in-depth study in specific areas of anatomy: histology, gross anatomy, and neuroanatomy.

#### **ANAT 615 Topics in Cell Biology**

Semester course; 2 lecture hours. 2 credits. A topical approach to current areas of interest in mammalian cell and molecular biology.

#### **ANAT 690 Anatomy Research Seminar**

1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology.

#### **ANAT 691 Special Topics in Anatomy**

1-4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas

of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of research.

**ANAT 697 Directed Research in Anatomy**

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

**Courses in biochemistry (BIOC)**

**BIOC 403/CHEM 403 Biochemistry**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 301-302, or equivalents with permission of instructor. A presentation of structural biochemistry, enzymology, biophysical techniques, bioenergetics and an introduction to intermediary metabolism.

**BIOC 404/CHEM 404 Advanced Topics in Biochemistry**

Semester course; 2 lecture hours. 2 credits.

Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 301-302, and CHEM/BIOC 403, or equivalents with permission of instructor. Presentations of cellular, molecular and structural aspects of biochemistry. Selected topics of biomedical research.

**BIOC 501 Biochemistry (Dentistry)**

Semester course; 5 lecture hours plus clinical correlations. 3 credits. Prerequisite: Organic chemistry, three credits of physical chemistry, or permission of instructor. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as part of the fundamental background of modern dentistry. Four clinical correlation workshops complement the lecture presentations.

**BIOC 502 Biochemistry (Medicine)**

Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students accepted in the School of Medicine. An introduction of structural biochemistry, intermediary metabolism, cell biology and methods of biochemical analysis as part of the fundamental background of modern medicine.

**BIOC 503-504/MICR 503-504 Biochemistry, Cell and Molecular Biology**

Continuous course; 5 lecture hours. 5 credits.

Prerequisites: Undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

**BIOC 505-506 Experimental Biochemistry**

Continuous course; 4 laboratory hours. 2 credits.

Prerequisite: BIOC 503 (or concurrent) or equivalent quantitative chemistry. Laboratory work, including theory and practice of advanced biochemical research methods.

**BIOC 507-508 Bioorganic Chemistry**

Continuous course; 3 lecture hours. 3 credits.

Prerequisite: Permission of the instructor. Study of structure, chemistry, and mechanism of small, biologically important molecules.

**BIOC 509 Biophysical Chemistry**

Semester course; 3 lecture hours. 2 credits. Study of major physical/chemical concepts of biological organi-

zation with emphasis on self-assembly and dynamic interactions of biological structures.

**BIOC 510 Radiation Safety**

Semester course offered on a demand basis (2-4 times or approximately 20 students per year); 15 lecture hours. 1 credit. Provides basic principles for the safe use of radioactive materials in biological research and meets the minimum training requirements set forth for responsible investigators in the university's Nuclear Radiation License.

**BIOC 516C Human Nutrition**

Semester course; 3 lecture hours. 3 credits. This off-campus survey course is designed for secondary school health and physical education, and biology teachers as well as others who wish to expand their knowledge of nutrition. The course involves core as well as current issues in human nutrition and primarily involves a series of interdisciplinary lecture/discussions. Topics include: description of the biochemistry and physiology of food components and nutrients; the accepted recommendations relating to health, nutrition and exercise, physical fitness and athletic performance; as well as topics related to eating disorders; growth and development; nutrition misinformation; nutrition and health issues.

**BIOC 523-524 Biochemistry (Pharmacy)**

Continuous course; 2-3 lecture hours. 2-3 credits.

Prerequisites: CHEM 301-302 or equivalent. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as a part of the fundamental background of modern pharmacy.

**BIOC 550 Basic Science Core Curriculum for Postgraduate Dental Students**

Semester course; 3 lecture hours. 3 credits. This course is designed to provide the postgraduate dental student with the educational experience in the basic science required for the successful completion of his/her specialty training program. Selected lectures in the basic science areas related to dentistry are presented and are supplemented by assigned articles.

**BIOC 601 Membranes and Lipids**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: BIOC 503-504. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, reconstituted systems, and signal transduction.

**BIOC 602 Physical Properties of Macromolecules**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: BIOC 503-504 and physical chemistry. Physicochemical approaches to the determination of the structure and conformation of macromolecules.

**BIOC 604 Enzymology**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: BIOC 503-504. Physical and chemical properties and mechanisms of action of enzymes. Treatment of chemical catalysis, enzyme kinetics, and correlation of enzyme structure to mechanisms.

**BIOC 605 Molecular Biology**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: Undergraduate chemistry or biochemistry. Nucleic acid structure, genetic code, DNA replication,

transcription, translation; structure and properties of self-assembling systems: viruses, ribosomes, cytoskeletal proteins, and membranes.

**BIOC 606 Biochemical Control Processes**

Semester course; 3 lecture hours. 3 credits.

Prerequisite: BIOC 503-504 and permission of instructor. An advanced course on aspects of control mechanisms at the molecular level.

**BIOC 610 Current Trends in Biochemistry**

Semester course; 2 lecture hours. 2 credits.

Prerequisites: BIOC 503-504. A study and literature review of common and complex biochemical substances using recent research methodology.

**BIOC 690 Biochemistry Seminar**

Semester course; 1 credit. Reports on recent biochemical literature and research by students and staff.

**BIOC 691 Special Topics in Biochemistry**

Semester course; 1-4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

**BIOC 697 Directed Research in Biochemistry**

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

**Courses in biostatistics (BIOS)**

**BIOS 513-514/STAT 513-514 Mathematical Statistics I-II**

Continuous course; 3 lecture hours. 3-3 credits.

Prerequisite: MATH 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

**BIOS 516 Biostatistical Consulting**

Semester course; 1 lecture hour. 1 credit. The principles dealing with the basic art and concepts of consulting in biostatistics. The nonstatistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

**BIOS 523/STAT 523 Nonparametric Statistical Methods**

Semester course; 3 lecture hours. 3 credits.

Prerequisites: Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two- and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables and coefficients of association.

**BIOS 524 Biostatistical Computing**

Semester course; 3 lecture hours. 3 credits. The Statistical Analysis System (SAS) is both a powerful computer language and a large collection of statistical procedures. Students learn how to create and manage computer data files. Techniques for thorough examination and validation of research data are presented as the initial step of a complete, computerized analysis. Descriptive statistics are computed and statistical procedures such as t-tests, contingency tables, correlation, regression, and analysis of variance then applied to the



data. Special attention is paid to the applicability of each procedure. Students are encouraged to analyze their own or typical data from their discipline.

### **BIOS 530 Elements of Biometry**

Semester course; 5 lecture hours weekly during January and February. 2 credits. For dental and medical fellows; graduate students with consent. Concepts of biostatistics and epidemiology. Summary statistics and tables. Normal distribution and statistical association. Chi-square tests, t-tests, Wilcoxon test, and other tests. Sensitivity, specificity, odds ratios, and related topics. Clinical trials, prospective and retrospective studies, and other miscellaneous topics in biostatistics and epidemiology.

### **BIOS 531 Clinical Epidemiology**

Semester course; 3 lecture hours. 3 credits. This course is intended primarily for clinicians. Permission of the course coordinator is required for others interested in registering. Epidemiological concepts necessary for evidence based studies of medicine. Specific topics will include: cause and effect criteria, demographic rates, measures of association or effect, study designs, decision trees, meta-analysis, evaluation of the literature, sources of data, reliability and validity, bias, confounding and effect modification, screening and diagnostic tests, sensitivity, specificity, false positives, false negatives, applications of the above to diagnosis and treatment, treatment efficacy and improved patient care.

### **BIOS 543, 544/STAT 543, 544/PMCH 543 Statistical Methods I, II**

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: Graduate standing or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit.

### **BIOS 546 Linear Models**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 513 and 543/553. Distribution of quadratic forms under normal theory; general linear model of full rank and less than full rank, Gauss-Markov theorem; estimability.

### **BIOS 553-554 Applied Statistics**

Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: MATH 200-201 or equivalent and one previous course in statistics and permission of instructor. Introduces applied statistics of biostatistics intended primarily for graduate students in the Department of Biostatistics. Reviews elementary probability, theory and frequency distributions, sampling theory, principles of inference, one and two sample problems. ANOVA. Principles of experimental design. Variance components. Multiple comparison procedures. Block designs and Latin Squares. Nested ANOVA. Multiway ANOVA. Correlation and regression analysis. Multiple regression. Nonlinear regression. ANCOVA. MANOVA. Repeated measures.

### **BIOS 571 Clinical Trials**

Semester course; 3 lecture hours. 3 credits. Concepts of data management and statistical design and analysis in

single-center and multicenter clinical trials. Data management topics include the collection, edition, and validation of data. Statistical design topics include randomization, stratification, blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

### **BIOS 572 Statistical Analysis of Biomedical Data**

Semester course; 3 lecture hours. 3 credits. Statistical methodology for data sets frequently encountered in biomedical experiments. Topics include analysis of rates and proportions, epidemiological indices, frequency data, contingency tables, logistic regression, life-tables and survival analysis.

### **BIOS 581 Applied Multivariate Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 544 or 554. Focuses on multivariate statistical methods, including Hotelling's T-square, MANOVA, multivariate multiple regression, canonical correlation, discriminant analysis, partially and blocking, multivariate outliers, components and factor analysis, and GMANOVA. Presumes the material in BIOS 543-544 or BIOS 553-554, including a matrix approach to multiple regression.

### **BIOS 615-616 Advanced Inference**

Continuous course; 4 lecture hours. 4 credits. Prerequisites: BIOS 514 and MATH 508, or permission of instructor. Mathematical preliminaries: probability and measure; integration; modes of convergence. Decision theoretical approach to statistical inference; decision rules; admissibility. Bayes and minimax procedures, invariance; complete classes. Point estimation; unbiasedness; efficiency; M, L, and R estimators; U statistics. Hypothesis testing: the Neyman-Pearson theory; unbiasedness and invariant tests; conditional tests; permutation tests; rank tests; likelihood based tests. Interval estimation; confidence sets; relationship between confidence sets and families of tests; unbiased and invariant confidence sets. Asymptotics; stochastic convergence; statistical limit theorems; ARE; asymptotic likelihood based procedures. Overview of robust statistical procedures.

### **BIOS 625 Analysis of Categorical Data**

Semester course; 4 lecture hours. 4 credits. Prerequisites: BIOS 514, 554 and 572. Introduction to the theory and methods of analysis of binomial and multinomial data. Topics include exact and asymptotic analysis of contingency tables; measures of association and agreement; modeling approaches including logistic regression, log-linear models, tests; invariance, MANOVA, GMANOVA, and multiple design models, nonparametric methods; inference with covariance matrices; principal components; factor analysis; discriminant analysis; clustering; multidimensional scaling.

### **BIOS 631-632 Multivariate Analysis**

Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: BIOS 514, 546, and 554. Introduction to the theory and methods of multivariate analysis; distributions; partial, multiple, and economical correlations; maximum likelihood and decision theoretical estimation; one-and two-sample tests; invariance: MANOVA, MANCOVA, GMANOVA, and multiple design models, nonparametric methods; inference with covariance matrices; principal components; factor analysis; discriminate analysis; clustering; multidimensional scaling.

### **BIOS 638-639 Statistical Design and Analysis in Toxicology**

Continuous course; 3 lecture hours. 3-3 credits. Prerequisites for BIOS students: BIOS 514 and 554. Prerequisite for non-biostatistics students (who can enroll on a Pass/Fail basis): BIOS 554. Classical bioassay, dose-response relationships, continuous and quantal data; probit and logit analysis; estimation of the ED50; combination experiments; low dose extrapolation and risk assessment; carcinogenicity, mutagenicity, and teratogenicity screening; overview of laboratory and experimental problems for the toxicologist. Non-biostatistics students may enroll on a pass/fail basis.

### **BIOS 647 Survival Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. The analysis of survival (or failure time) data, with/without censoring. Actuarial and life-table methods, nonparametric and parametric estimation of survival functions, and comparison of survival curves; regression methods, such as the Cox proportional hazards model; competing risks; sequential models; applications to clinical trials.

### **BIOS 650 Design and Analysis of Response Surface Experiments**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 546 and 554. Philosophy, terminology, and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analyses, description of the response surfaces, rotatability, uniform information designs, central composite in design, and modern design criteria.

### **BIOS 655 Quantitative Epidemiology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 554 and 572. Examines the quantitative aspects of epidemiological research. Includes causality in epidemiological research; the design, analysis, and interpretation of cohort and case-control studies; bias, confounding, and misclassification; matching, stratification, and adjusting of covariates; generalized linear models in epidemiological research, goodness-of-fit tests, and goodness-of-link tests.

### **BIOS 660 Sequential Analysis and Advanced Design and Analysis of Clinical Trials**

3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. Sequential methods versus fixed sample methods; the sequential probability ratio test with extensions and modifications; some applications of Cox's theorem; overview of analysis of clinical trials; closed and truncated tests; group sequential tests in clinical trials; sequential monitoring; sequential estimation; other topics with emphasis in clinical trials.

### **BIOS 667 Advanced Data Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. Explores recently developed data analysis techniques to find the main features and underlying structure of data. Includes robust methods, bootstrap, linear model diagnostics, cross validation, nonparametric regression, optimal transformation, ACE algorithm, projection pursuit regression.

### **BIOS 690 Biostatistical Research Seminar**

Semester course; 1 lecture hour. 1 credit. Talks by the students, faculty, and visitors describing recent research or reviewing topics of mutual interest.

### **BIOS 691 Special Topics in Biostatistics**

Semester course; lecture and laboratory hours by arrangement. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized biostatistical procedures not available in other courses or as part of the research training.

### **BIOS 697 Directed Research in Biostatistics**

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## **Courses in human genetics (HGEN)**

### **HGEN 501/BIOL 530 Human Genetics**

Semester course; 3 credits. Prerequisites: BIOL 310 and CHEM 301, 302 and CHEZ 301L, 302L or equivalents. Emphasizes a broad approach, at an advanced level, to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn errors of metabolism, neonatal screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis and genetic counseling.

### **HGEN 502 Advanced Human Genetics**

Semester course; 2-6 lecture hours. 2-6 credits. Prerequisite: HGEN 501 or equivalent. For human genetics graduate students only. A comprehensive study of the principles of specific areas in human genetics.

### **HGEN 511 Human Cytogenetics**

Semester course; 3 lecture hours. 3 credits. Prerequisites: HGEN 501 and HGEN 502. A discussion of recent advances in human cytogenetics. Topics covered will include chromosome banding techniques and ultrastructure, meiosis, numerical and structural abnormalities, fragile sites, cancer cytogenetics, methodology for linkage studies, and population cytogenetics. Clinical cases are used to illustrate the application of special diagnostic methodologies.

### **HGEN 516/BIOL 516 Population Genetics**

Semester course; 3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms.

### **HGEN 518 Methods in Human Population Genetics**

Semester course; 3 lecture hours. 3 credits. Data analysis and discussion of methods including segregation analysis and linkage. Topics covered will include inbreeding, ascertainment, and genetic epidemiology.

### **HGEN 525-526 Practice of Genetic Counseling**

Continuous course; 3 lecture hours. 3-3 credits. Provides context for practice of genetic counseling through literature review and practical techniques. Places specific emphasis on pregnancy and childhood evaluation, interviewing techniques, social and ethical issues, including fieldwork in prenatal, general genetics and specialty clinics.

### **HGEN 527-528 Medical Genetics**

Continuous course; 3 lecture hours. 3-3 credits. Provides medical information and principles of human genetic disease with specific emphasis on the molecular basis of Mendelian disorders, disorders of sexual development, assessment of dysmorphic features, and the genetics of common diseases. Emphasizes the use of all available resource materials in genetics.

### **HGEN 531 Dental Genetics**

Semester course; 1 lecture hour. 2 credits. The basis of inheritance and variation in man, including simple and complex modes of inheritance, the nature of mutations, human chromosomal aberrations, variation in protein and antigens, genetic aspects of some syndromes, and birth defects.

### **HGEN 600 Clinical Genetics**

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: HGEN 501 or equivalent. Practical experience in the genetic counseling clinic and on ward rounds. Includes collection and analysis of family histories, genetic counseling, and introduction to genetic nosology.

### **HGEN 603 Mathematical and Statistical Genetics**

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 543-544 or equivalent. Provides an introduction to the rudiments of theoretical and applied mathematical population genetics including the segregation of genes in families, genetic linkage and quantitative inheritance. Emphasizes the methods used in the analysis of genetic data.

### **HGEN 614 Human Biochemical and Molecular Genetics**

Semester course; 4 lecture hours. 4 credits. Prerequisites: BIOC 503-504, equivalent, or permission of instructor. Surveys the mechanisms and varieties of human gene mutations resulting in human genetic disease and emphasizes different investigational disorders using current scientific literature.

### **HGEN 617 Genetic Analysis of Complex Traits**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Introductory biostatistics or permission of instructor. Introduces the theory and practice of analysis of complex human traits. Provides a solid grounding in the fundamental concepts, study designs and analytical strategies for this evolving and important area.

### **HGEN 618 Advanced Segregation and Linkage Analysis**

Semester course; 3 lecture hours. 3 credits. Prerequisite: HGEN 617 or permission of instructor. Focuses on advanced topics related to segregation and linkage analysis. Presents alternatives to single major locus segregation patterns, advanced linkage analysis techniques such as multipoint mapping, and combined segregation and linkage analyses.

### **HGEN 619 Quantitative Genetics**

Semester course; 3 lecture hours. 3 credits. The effects of genes and environment on complex human traits with emphasis on: Genetic architecture and evolution; nongenetic inheritance; mate selection; developmental change; sex-effects; genotype-environment interaction; resolving cause from effect; design of genetic studies, statistical methods and computer algorithms for genetic data analysis.

### **HGEN 620 Principles of Human Behavioral Genetics**

Semester course; 3 lecture hours. 3 credits. The theory of genetic and nongenetic transmission considered in relation to the design, analysis, and interpretation of studies to identify the principal genetic and environmental causes of behavioral variation. Included will be analysis of intelligence, personality, social attitudes, and psychiatric disorders.

### **HGEN 631 Advanced Dental Genetics**

Semester course; 1 lecture hour. 1 credit. This course follows HGEN 531 and provides instruction on the genetic basis for craniofacial and dental anomalies, caries and periodontal disease. Topics also include genetic consultation and ethical, legal and social issues surrounding genetic testing.

### **HGEN 690 Genetics Research Seminar**

Semester course; 1 lecture hour. 1 credit. Selected topics in genetics presented by students and staff.

### **HGEN 691 Special Topics in Genetics**

1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training.

### **HGEN 697 Directed Research in Genetics**

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## **Courses in microbiology and immunology (MICR)**

### **MICR 365 Infection and Immunity (Dental Hygiene)**

Semester course; 3 lecture and 2 laboratory hours. 3 credits. A study of infectious diseases and the immune system of man with emphasis on the distribution properties and roles of pathogenic microorganisms and the varied responses of the host, with emphasis on oral pathologies. Principles of prevention, control, and chemotherapy of infectious diseases are major components of the course. Microbiological procedures that relate to nursing and dental hygiene practice are demonstrated, practiced, and evaluated in laboratory exercises and conferences.

### **MICR 501 Microbiology (Pharmacy)**

Semester course; 2.5 lecture and 3.5 laboratory hours. 3.5 credits. Prerequisite: BIOC 402 or equivalent. Offered in the School of Pharmacy and open primarily to pharmacy students in the junior year; others by permission of the instructor. A study of the fundamental principles of microbiology and immunology with emphasis on various aspects of the process and control of infectious disease.

### **MICR 503-504/BIOC 503-504 Biochemistry, Cell and Molecular Biology**

Continuous course; 5 lecture hours. 5 credits. Prerequisites: Undergraduate organic and physical chemistry, or permission of the instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

### **MICR 505 Immunobiology**

Semester course; 3 lecture hours. 3 credits. A survey of immunobiology as a total host response to foreign agents, covering the nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, allergic reactions, tumor immunology, transplantation immunology, immunological diseases and immunogenetics.

### **MICR 507 Techniques in Molecular Biology and Genetics**

Semester course; 2 lecture hours. 2 credits.  
Prerequisite: BIOC/MICR 503-504 or equivalent, permission of instructor. Designed to give an overview of the techniques utilized in modern molecular biology. The principles underlying techniques such as plasmid and phage cloning, RNA and DNA analysis, PCR, DNA sequencing, mutagenesis, genomic mapping, heterologous gene expression, and production and analysis of recombinant protein and transgenic mouse technology will be discussed in detail by experts in the field.

### **MICR 508-509 Introduction to Microbiology and Immunology Research**

Continuous course; lectures and 4 laboratory hours. 3-3 credits. Prerequisite: Permission of instructor. Required of all first-year graduate students. Introduction to all active research programs in microbiology and immunology. Presentations of research programs by investigators and rotation of students through faculty laboratories to gain direct exposure to individual research projects.

### **MICR 510 Scientific Integrity**

Semester course; 1 lecture hour. 1 credit. A survey of contemporary issues relating to responsible conduct in research. Topics include academic integrity, mentoring, authorship and peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, collaborative research, research misconduct and genetic technology.

### **MICR 512 Laboratory Safety**

Semester course; 1 lecture hour. 1 credit. Describes health hazards commonly found in biomedical laboratories and their appropriate safety precautions, government regulations and emergency responses. Includes hazards of working with micro-organisms, experimental animals, and chemical, electrical and fire hazards.

### **MICR 513 Infection and Immunity (Dentistry)**

Semester course; 3.5 lecture hours. 3.5 credits. A lecture and laboratory study of the disease producing microorganisms of man with special emphasis on the roles of microorganisms in oral diseases and related topics that are of importance in dentistry.

### **MICR 515 Principles of Molecular Microbiology**

Semester course; 3 lecture hours. 3 credits. A comprehensive course designed to provide the student with a thorough understanding of microbial physiology, genetics and diversity. Also covered are some basic concepts in microbial pathogenesis and in applied microbiology. The course focuses on structural and functional characteristics of micro-organisms; ecological and physiological diversity of microbes; growth and control of micro-organisms; genetics of bacteria and viruses; bacteria as agents of disease; and applications of microbiology.

### **MICR 516 Mechanisms of Viral and Parasite Pathogenesis**

Semester course; 3 lecture hours. 3 credits. A comprehensive introduction to the basic principles of virology and human parasitology. Interactions of the infecting agents and hosts will be stressed at the molecular and cellular level.

### **MICR 518 Molecular Mechanisms of Bacterial Pathogenesis**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: Undergraduate-level courses in microbiology or microbial physiology, immunology and molecular genetics. The goals of this comprehensive course are to explore in detail the virulence mechanisms of microbes and the response of the infected host. The focus will be on important bacterial pathogens.

### **MICR 605 Prokaryotic Molecular Genetics**

Semester course; 2 lecture hours. 2 credits.  
Prerequisites: BIOC/MICR 503-504 and MICR 515 or permission of instructor. A comprehensive introductory course examining the organization of the genetic material in bacteria and their viruses and the molecular mechanisms involved in its maintenance, replication, exchange and expression. Emphasis will be on experimental approaches integrating classical and modern methods of genetic analysis with biochemical studies of genetic regulatory mechanisms.

### **MICR 653 Advanced Molecular Genetics: Bioinformatics**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: MICR/BIOC 503 and 504, and permission of instructor. An advanced course on contemporary bioinformatics. Topics covered include the principles and practice of DNA, RNA and protein sequence analysis, computational chemistry and molecular modeling, expression array analysis and pharmacogenomics. The course includes lectures, reading, computer lab, homework problem sets and projects.

### **MICR 654 Advanced Molecular Genetics – Bioinformatics**

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: MICR 605 or BIOC 605 and permission of instructor. An advanced course on the bioinformatics. Topics covered include the principles and practice of DNA, RNA and protein sequence analysis. The course includes lectures, readings, computer labs, homework problem sets and projects.

### **MICR 686 Advanced Immunobiology**

Semester course; 2 lecture hours. 2 credits. Open primarily to residents, medical students and graduate students with an immunology background such as MICR 505. Lectures, seminars and conferences on basic and clinical immunobiology. Topics have included tumor immunology, cell interactions in the immune response, genetics of the immune response, mechanisms of host-defense and membrane receptors in immunology and neoplasia.

### **MICR 690 Microbiology Research Seminar**

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminars.

### **MICR 691 Special Topics in Microbiology**

Semester course; 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

### **MICR 697 Directed Research in Microbiology**

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

## **Course in neuroscience (NEUS)**

### **NEUS 891 Advanced Topics in Neuroscience**

Semester course; 1 lecture hour. 1 credit. Prerequisite: Permission of instructor. Advanced topics in neuroscience with correlations to research and clinical applications. Interdisciplinary presentation of the relationship of principles of neuroscience to current areas of investigation.

## **Courses in pathology (PATH)**

### **PATH 445/FRSC 445 Forensic Toxicology**

Semester course; 3 lecture hours. 3 credits.  
Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L; CHEM 301-302 and CHEZ 301L. Provides a comprehensive overview of the basic principles of toxicology and the practical aspects of forensic toxicology. Students will learn to define the toxic agents most commonly resulting in legal problems in U.S. society and also the process by which the U.S. judicial system is aided by scientific investigation.

### **PATH 521 Laboratory Techniques in Diagnostic Pathology**

Semester course; 3 lecture hours. 3 credits. This team taught course includes principles of automated and non-automated testing, diagnostic testing, and an active laboratory demonstration of each method.

### **PATH 522 Clinical Chemistry**

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of instructor. The metabolic basis of disease and the interpretation of laboratory data for diagnosis and patient management.

### **PATH 540 Pathology for Allied Health Sciences**

Semester course; 1.5 lecture and 1 laboratory hour. 2 credits. Explores morbid tissue changes involved in selected disease states, with emphasis on musculoskeletal and nervous systems. Provides the foundation to understanding clinical problems that physical therapists and other paramedical personnel will encounter and treat in their patients.

### **PATH 570 Experimental Approaches to Tumor Biology**

Semester course; 3 lecture/discussion hours. 3 credits. Introduces central problems in tumor biology and the methods available for their study. Develops through lectures and presentations skills in critical review and interpretation of research reports.

### **PATH 590 Experimental Pathology Seminar**

Semester course; 1 lecture hour. 1 credit.

### **PATH 601 General Pathology (Dentistry)**

Semester course; 6 lecture hours. 6 credits. Instruction in the basic principles regarding alteration of structure and function in disease and in the pathogenesis and effect of disease in the various organ systems.

### **PATH 620 Special Topics in Modern Instrumental Methods**

Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studies.

### **PATH 690 Clinical Chemistry Seminar**

Semester course; 1 lecture hour. 1 credit. Graduate students, residents, and staff present topics of current interest in clinical chemistry.

### **PATH 691 Special Topics in Modern Instrumental Methods**

Semester course; 1 lecture and 2 laboratory hours. 2 credits. By special arrangement with instructor. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studied.

### **PATH 697 Research in Pathology**

Semester course; 1-15 credits. Research leading to Ph.D. degree and elective research projects for other students.

## **Courses in physiology (PHIS)**

### **PHIS 206 Human Physiology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" grade or better in BIOL 101 and 101L or equivalent. Functioning of the human body with emphasis on experimental procedures. Not applicable to the biology major.

### **PHIS 461 Introduction to Human Physiology**

3 lecture hours. 3 credits. Prerequisites: Biology, general chemistry, and human anatomy. An introductory course to human physiology based on an analysis of organ systems.

### **PHIS 501 Mammalian Physiology**

Semester course; 5 lecture hours. 5 credits. Prerequisites: Biology, chemistry, and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students.

### **PHIS 502 Physiology and Pathophysiology (Dentistry)**

Semester course; 5 lecture hours. 5 credits. Prerequisites: Same as for PHIS 501. A comprehensive study of the function of mammalian organ systems, designed primarily for dental students.

### **PHIS 504c Mammalian Physiology**

Semester course; 3 lecture hours. 3 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for high school science teachers.

### **PHIS 506 Mammalian Physiology (Pharmacy)**

Semester course; 5 lecture hours. 5 credits. A comprehensive study of the function of mammalian organ system, designed primarily for pharmacy students.

### **PHIS 509/ANAT 509/PHTX 509 Introduction to Neuroscience**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

### **PHIS 512 Cardiovascular and Exercise Physiology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 501 or permission of instructor. A comprehensive study of cell and system cardiovascular and exercise physiology with pathophysiological implications, primarily designed for professional students. Physiological basis and introduction to the practical interpretation of the electrocardiogram will be taught with a computer-assisted method.

### **PHIS 604 Cell Physiology**

Semester course; 4 lecture hours. 4 credits. Provides first year graduate students with a physiological understanding of excitable tissues at the cellular level. Topics covered include the resting membrane potential and action potential, communication between excitable cells, sensory transduction mechanisms and contractile tissues.

### **PHIS 606 Physical Principles in Physiology**

Semester course; 4 lecture hours. 4 credits. Prerequisite: PHIS 605 or permission of instructor. A survey of those principles of physics and physical chemistry underlying physiological processes. Topics include energetics of equilibrium and nonequilibrium systems, electrode processes, reaction-diffusion systems, kinetics, photochemistry, physical techniques in physiological research.

### **PHIS 612 Cardiovascular Physiology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An in-depth study of the original literature in selected areas of cardiovascular physiology.

### **PHIS 615 Signal Detection in Sensory Systems**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHIS 501 or permission of instructor. An in-depth study of cells and cell systems that serve as either internal or external environmental sensors. Topics will emphasize the physiology, anatomy and the biochemistry of mature sensing systems, the systems in normal development and their plasticity toward stresses during development or in maturity.

### **PHIS 617 Cellular Signaling**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 501 and BIOC 503 or permission of instructor. An in-depth study of the original literature in selected areas that involve cellular signaling.

### **PHIS 618 Renal and Epithelial Physiology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHIS 604 or permission of instructor. An in-depth study of selected areas of renal and epithelial physiology. Topics include mechanisms of salt and water transport in the nephron, urinary concentrating mechanisms, hormonal regulation of ion transport, role of the kidney in acid-base homeostasis, diuretics, ion transport in amphibian epithelia, water and solute transport in gastrointestinal epithelia and lingual epithelia.

### **PHIS 630 The Application of Network Thermodynamics to the Analysis and Computer Simulation of Life Processes**

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisite: Consent of instructor. Network thermodynamics applied to organization in living systems. Relations between biological and electrical networks. Simulation of nonlinear, complex, dynamic,

physiological, pharmacological, and biochemical systems with applications to diffusion, blood flow, reaction kinetics, membrane transport (cellular and epithelial), endocrine effects, cellular and whole body pharmacokinetics, model design and verification, metabolic regulation and control, reaction-diffusion systems, morphogenesis, others.

### **PHIS 690 Physiology Research Seminar**

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminar.

### **PHIS 691 (Section 1) Special Topics in Physiology**

1-4 credits. Prerequisites: A 500-level physiology course or equivalent and permission of instructor. Lectures, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

### **PHIS 691 (Section 3) Special Topics: Student Seminar**

Semester course; 1 credit. Designed to develop skills in preparing and delivering lectures and other oral presentations. Students present talks on topics in which they are particularly interested, and provide mutual constructive criticism.

### **PHIS 691 (Section 5) Special Topics: Nutrition Research**

Semester course; 3 credits. Weekly discussion of selected topics in nutrition. Topics change yearly. Topics range from biochemical aspects of nutrition to International Nutrition, with selections from various levels of nutritional interest presented each year. Past topics have included nutrition and exercise, diet and cancer, total parenteral nutrition, alcohol nutrition, food safety, drug-nutrient interactions, nutrition and immunological response, cholesterol and nutrition, salty taste mechanisms, vitamin A, vitamin D, and intestinal calcium absorption.

### **PHIS 697 Directed Research in Physiology**

Semester course; 1-15 credits. Research Leading to the M.S. or Ph.D. degree and elective research projects for other students.

### **PHIZ 206L/BIOZ 206L Human Physiology Laboratory**

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisites: PHIS 206. Functioning of the human body with emphasis on experimental procedures. Not applicable to the biology major.

## **Courses in pharmacology and toxicology (PHTX)**

### **PHTX 400 Drugs and their Actions**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Junior or senior or permission of instructor. This course is a general survey of pharmacology and related disciplines. The history and basic principles are presented followed by discussions of neuropharmacology, psychoactive drugs, drugs of abuse, immunopharmacology, basic toxicology, drug design, drug development, autonomic pharmacology, cardiovascular pharmacology, and endocrine pharmacology, as well as selected topics including scientific ethics, molecular pharmacology, and behavioral pharmacology.

**PHTX 441 Pharmacology (Dental Hygiene)**

Semester course; 5 lecture hours. 5 credits. A didactic course designed to emphasize the principles of pharmacology and pain control and the rationale of drug actions, uses, and adverse effects.

**PHTX 509/ANAT 509/PHIS 509 Introduction to Neuroscience**

Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

**PHTX 515 Pharmacology for Nurse Anesthetists I**

Semester course; 3 lecture hours. 3 credits. The basic principles of pharmacology including mechanisms of absorption, distribution, biotransformation, elimination, dose-response relationships, drug and receptor interactions are presented followed by a detailed discussion of autonomic, cardiovascular, and renal pharmacology as it relates to nurse anesthesia. Detailed presentation of the pharmacology of classes of drugs used by nurse anesthetists will be made, with emphasis on general anesthetics.

**PHTX 516 Pharmacology for Nurse Anesthetists II**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 515. Detailed presentation of the pharmacology of classes of drugs used or encountered by nurse anesthetists will be made with emphasis upon local anesthetics, cardiovascular, chemotherapeutic, and anti-inflammatory agents. Continuation of PHTX 515.

**PHTX 535 Introduction to Toxicology**

Semester course; 4 lecture hours. 4 credits. The basic principles of toxicology and toxicological evaluations; correlations of toxicological responses with biochemical, functional and morphological changes; environmental (including occupational and public health), forensic and regulatory concerns; and risk assessment and management are presented for graduate students in the biomedical sciences.

**PHTX 536 Principles of Pharmacology and Toxicology**

Semester course; 5 lecture hours. 5 credits. Prerequisites: PHIS 501 and BIOC 503 or permission of instructor. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacologically active agents and basic principles of pharmacology are discussed. Topics include drug absorption, distribution, and metabolism; chemotherapy; endocrine pharmacology and principles of toxicology/immunotoxicology.

**PHTX 537 Principles of Pharmacology and Toxicology**

Semester course; 5 lecture hours. 5 credits. Prerequisites: PHTX 536 or with permission of instructor. Topics include receptor theory, autonomic, cardiovascular, and central nervous system pharmacology and toxicology. Continuation of PHTX 536.

**PHTX 548 Drug Dependence**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate or post-baccalaureate standing. A broad survey course in problems of drug and alcohol use and abuse. It will focus on the pharmacology of abused drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus.

**PHTX 597 Introduction to Pharmacological Research**

Continuous course; 1-12 credits. Prerequisite: Permission of instructor. Rotation research in pharmacology and toxicology laboratories for beginning graduate students.

**PHTX 603 Principles of Pharmacology (Pharmacy)**

Semester course; 2.7 lecture and 0.3 laboratory hours. 3 credits. The basic principles of pharmacology and an in-depth consideration of the biodisposition and mechanisms of action of these agents. Drugs acting on the autonomic nervous system, chemotherapeutic agents, and endocrine agents are covered this semester.

**PHTX 604 Pharmacological Agents (Pharmacy)**

Semester course; 3.7 lecture and 0.3 conference hours. 4 credits. Includes drugs acting on the cardiovascular and central nervous system and principles of toxicology. This is a continuation of PHTX 603.

**PHTX 609 Dental Pharmacology and Pain Control I**

Continuous course; 2 lecture hours per week for 2 semesters. One grade for 4 credits at end of second semester. A two-semester course that covers the study of the effects of chemical agents on the structure and function of living tissues, which may be normal or pathological. Provides a basic understanding of pharmacological principles and the basic concepts of currently accepted theories of pain mechanisms and provides a scientific basis for the use of therapeutic agents in order that the future dentist will be able to safely administer drugs to control pain by parenteral, oral or inhalation routes.

**PHTX 611 Dental Pharmacology and Pain Control II**

Semester course; 2 lecture hours per week. 2 credits. Offered for the D-3 students who have successfully completed PHTX 609. A continuation of PHTX 609. The study of the effects of chemical agents on the structure and/or function of living tissues, which may be normal or pathological. Provides a basic understanding of pharmacological principles and the basic concepts of currently accepted theories of pain mechanisms and provides a scientific basis for the use of therapeutic agents in order that the future dentist will be able to safely administer drugs to control pain by parenteral, oral or inhalation routes. PHTX 611 differs from PHTX 609 in that the material presented is more clinical in content and more classes involve clinical correlates of the didactic material presented.

**PHTX 620/PHIS 620 Ion Channels in Membranes**

Semester course; 3 lecture hours. 3 credits. Previous course work including basic concepts in electrophysiology, such as those covered in PHIS 501 Mammalian Physiology or PHTX/PHIS/ANAT 509 Introduction to Neurosciences, is highly recommended. Detailed presentation of the fundamental biophysical properties of

ionic channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function.

**PHTX 625 Cell Signaling and Growth Control**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or consent of instructor. Covers biochemical and molecular biology approaches to pharmacological problems. Emphasizes signal transduction, oncogenes, protein kinases, stress responses and the control of cellular proliferation.

**PHTX 632 Neurochemical Pharmacology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHTX 536 or consent of instructor. Investigates the mechanisms of drugs acting on the central nervous system in relation to their effects on endogenous neurochemical systems. Examines the milieu in which drugs act upon the central nervous system, experimental techniques frequently used in neuropharmacology, specific neurotransmitter systems, as well as the mechanisms of action of specific drugs.

**PHTX 633 Behavioral Pharmacology**

Semester course; 3 lecture hours. 3 credits. This is a survey course covering research on the effects of drugs on behavior. The major emphasis will be on schedule-controlled learned behavior. Additional topics will include drug self-administration, drug discrimination, and conditioned drug effects and behavioral toxicology. The course focuses primarily on laboratory research in animals although human research will also be covered. The relevance of this research literature to drug treatment of behavioral disorders and substance abuse will be discussed.

**PHTX 637 Cellular Pharmacology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. The principles governing the interactions of drugs and hormones with their cellular receptors are presented followed by a discussion of the biochemical mechanisms by which the interactions are transduced into specific cellular responses. Lectures are supplemented with demonstrations and student presentations of current literature in the area.

**PHTX 638 Cellular Mechanisms of Toxicology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. A holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

**PHTX 639 Drug Development**

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: PHTX 536 and 537 or their equivalents. The principles of drug screening, advanced testing, and procedures necessary prior to the clinical evaluation of new products are described. An emphasis is placed on physiological type procedures used in pharmacology.

**PHTX 644 Forensic Toxicology**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Lecture and demonstrations in which common poisons and groups of poisons are discussed as to detection, diagnosis, and treatment of poisoning. Demonstrations include basic principles of analytical toxicology, forensic science, and courtroom testimony.

**PHTX 690 Pharmacology Research Seminar**

Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.

**PHTX 691 Special Topics in Pharmacology**

Semester course; 1-4 credits. Prerequisite: Permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

**PHTX 697 Directed Research in Pharmacology**

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective projects for other students.

**Courses in preventive medicine and community health (PMCH)**

**PMCH 511-512 Basic Industrial Hygiene I and II**

Continuous course; 3 lecture hours. 3 credits. Basic concepts including: epidemiology, industrial toxicology, biological monitoring dermatosis, sampling strategy, solvents, particulates, respiratory protection, ventilation, sound, heat stress, radiation, ergonomics, special topics, and the regulatory aspects.

**PMCH 521 Regulation of Toxic Substances**

Semester course; 3 lecture hours. 3 credits. This course introduces the student to the administrative law and policy issues. This course examines the Clean Water Act, Clean Air Act, Resources Conservation & Recovery (RCRA), Federal Facility Compliance Act, Comprehensive Environmental Response, Compensation & Liability Act (CERCLA-Superfund), Toxic Torts; Real Estate Issues; Recovery of Money Damages; Criminal Law, Occupational & Mine Safety & Health Acts (OSHA/MSHA), Workman's Compensation; Occupational Disease; Victim Compensation, Safe Drinking Water Act; Pollution Prevention Act, Food Drug & Cosmetic Act, RCRA & Superfund Regulations & Case Law; State Hazwaste/Superfund Programs, Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA); Lead Based Paint Poisoning Prevention Act, Radiation Law & Regulation; Transportation, Marine Sanctuaries Act; International Environmental Law.

**PMCH 531/BIOS 531 Clinical Epidemiology**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Must have completed statistics course before being given permission to take epidemiology course with permission of instructor. A survey course which focuses on the concepts of epidemiology and its role in risk assignment. This course will distill the underlying theory and the principles used by epidemiologist. The course will introduce the sources and uses of vital data, their conversion into morbidity and mortality rates and indices. Procedures such as age standardization and abridged life table will be introduced, as will concepts of disease transmission, epidemiology and various summary statistics. The Surgeon General's

criteria for causation will be examined, designs in epidemiological research reviewed, and the use and limitations for epidemiological data in risk assessment described. Students should have a current VAX account and some background in mathematics and elementary statistics.

**PMCH 541 Principles of Waste Management**

Semester course; 3 lecture hours. 3 credits. Design and operation of waste treatment, storage, disposal and control processes will be covered. Design tanks, landfills, and incinerators will be discussed in detail. Data acquisition and interpretation methods needed for process control and monitoring will be examined.

**PMCH 543/BIOS 543/STAT 543 Statistical Methods I**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

**PMCH 571 Principles of Epidemiology**

Semester course; 2 lecture hours and 1 seminar. 3 credits. Offers the theoretical foundation for understanding the health problems and needs of American society and uses scientific and social knowledge to examine factors that cause and alter the course of health problems in selected populations.

**PMCH 583 Industrial Ventilation**

Semester course; 3 lecture hours. 3 credits. Principles of design and evaluation of local exhaust systems. Principles of airflow, characteristics of pressure losses, and selection of air cleaners and air moving.

**PMCH 600 Introduction to Public Health**

Semester course; 3 lecture hours. 3 credits. Describes the public health system in the United States. Explores the disease prevention and philosophy and foundations of public health management, economics, law, ethics and education. Examines the use of epidemiology and statistics to determine personal, environmental, and occupational health problems.

**PMCH 602/HADM 602 Health System Organization, Financing and Performance**

Semester course; 3 lecture hours. 3 credits. Examines the structure, functioning and financing of the U.S. health services system. Emphasizes foundational concepts for understanding and analyzing patterns of health and illness; health care cost, quality, access and utilization; workforce; competition in health care markets; and supplier, provider and payer effectiveness and efficiency.

**PMCH 603 Public Health Policy and Politics**

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the public health policy development process, the influence of politics and special interest

groups on this process, and current governmental policies for the provision of major public health services. The legislative process is a major focus of the course.

**PMCH 604 Principles of Occupational and Environmental Health II**

Semester course; 3 lecture hours. 3 credits. Basic principles of occupational and environmental health are presented, with emphasis on biological, chemical, and physical factors that influence human health. Current workplace and public health safety and regulatory issues are emphasized.

**PMCH 605 Epidemiology of Health Behaviors**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 543 and PMCH 571. Provides an overview of the epidemiology of specific health-related behaviors, the relationships between these behaviors and health outcomes, and available evidence for the effectiveness and appropriateness of various approaches to modification of these behaviors. This material will be covered in the contexts of theories of health-related behavior and of methodological issues concerning the assessment of these behaviors and their relationships to outcomes of interest. The applicability of this material to underserved populations will be emphasized. The course format, as far as possible, will be that of an interactive seminar.

**PMCH 606 Epidemiologic Methods II**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 543 and PMCH 571. Examines the whys and hows of determining major population health risks. Focuses on the design of a research project to determine the risks to health of an identified population using sampling and survey techniques, data collection and data analysis.

**PMCH 607 Nutritional Epidemiology**

Semester course; 3 lecture hours. 3 credits. This course focuses on methods of measuring exposures to dietary factors for epidemiological investigations of diet-disease relationships and risk assessment. An introductory course in basic epidemiology is a prerequisite. Students learn to select the most appropriate method(s) of collecting and analyzing food intake and to evaluate the adequacy of dietary assessment methods used in published epidemiological studies.

**PMCH 610 Environmental and Occupational Epidemiology**

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 543 and PMCH 571. This course is designed to provide students with an overview of the principles, methods and content of environmental and occupational epidemiology with a focus on designing, conducting, and interpreting studies on the effects of chemical and physical agents. Students will critique published occupational and environmental epidemiology studies, learn how to evaluate the potential for cause-effect relationships, and become familiar with the role of epidemiology in human health risk assessment. Each session will include a seminar component where exercises are completed and/or published papers will be critiqued and discussed.

**PMCH 615 Public Health Issues and Interventions in Communities of Color**

Semester course; 3 lecture hours. 3 credits. This course is an overview of many critical psychological, social, cultural, demographic, biological, and other factors that influence lifestyle and disease susceptibility among

minority status ethnic groups and other medically underserved populations in the United States. A lecture/discussion seminar format will be used, along with readings, student presentations and guest lecturers working in the field, to: (1) improve the students' understanding of the underpinnings of health status differences across communities; and (2) provide students with tools that can be used in developing effective interventions to address the maldistribution of health risk behavior and disease burden.

#### PMCH 616 Public Health Education

Semester course; 3 lecture hours. 3 credits. Provides the student with an examination of theory and practice of public health education. This examination represents an overview of selected topics that are congruent to the Responsibilities and Competencies for Entry-Level Health Educators. Specifically, course content will be centered around assessing individual and community needs for health education programs, coordinating provision of health education services, acting as a resource person in health education, and communicating health and health education needs, concerns, and resources.

#### PMCH 617/HADM 626 International Health

Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

#### PMCH 618 Public Health Law

Semester course; 3 lecture hours. 3 credits. Provides the student with the structure of the legal system and statutes and regulations governing state and local health departments. This course examines the federal public health laws, medical malpractice, privacy and confidentiality issues, mental health laws, abortion and sterilization, patients rights, emergency medical care law, human experimentation, rights of the terminally ill, AIDS law, occupational and environmental health law, and health planning and reimbursement law.

#### PMCH 619 Intentional Injury

Semester course; 3 lecture hours. 3 credits. Examines the number, distribution, and impact of intentional injuries in the United States, as well as some of the crucial psychological, social, cultural, demographic, economic, biological, and other factors associated with their cause, control, and prevention. Through lectures and dialogue, expert panels, student presentations, reading, and other assignments, students are expected to become acquainted with theory and research findings from the behavioral sciences, behavioral epidemiology, public health, and other sources that are likely to contribute to: (1) a greater comprehension of the magnitude and complexities of violence and intentional injuries in American life and (2) advancements in our capacity to successfully confront this epidemic with public health and related measures.

#### PMCH 691 Program Research Project

Semester course; 9 clinical hours. 1-6 credits. Each student will complete a research project that demonstrates the application of the knowledge acquired in the MPH Program. The student will answer one or more relevant research questions. The final product is a scholarly written report of publishable quality. A proposal must be submitted for approval and credits are assigned commensurate with the complexity of the project. Arrangements are made directly with the faculty adviser.

#### PMCH 692 Special Topics (Nutrition Research)

Semester course; 3 lecture hours. 1-6 credits. This course consists of weekly discussions of selected topics in nutrition led by the faculty plus an assigned paper and presentation at the end of the semester by each student. The topics to be presented by the faculty include: food safety, the aspartame example; diet, nutrition and cancer; exercise and nutrition; the vitamin A story; the FDA and food safety; nutrition and GI motility; nutrition assessment techniques; nutrition of the critically ill; the vitamin D story; cholesterol nutrition; nutrition and wound healing; how salty taste works; stable isotopes in nutrition studies.

### Department of Anatomy and Neurobiology

#### John T. Povlishock

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B.S. 1969 Loyola College  
M.S. 1971 and Ph.D. 1973 St. Louis University

Beckman, Matthew J.\*, Assistant Professor  
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Ph.D. 1982 Stanford University  
Broadus, William C.\*, Associate Professor  
Bullock, M. Ross\*, Professor  
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B.S. 1980 Western Illinois University  
Ph.D. 1990 Oxford University  
Costanzo, Richard M.\*, Professor  
Diegelmann, Robert F.\*, Professor  
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Finucane, Sheryl\*, Assistant Professor  
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Goldberg, Stephen J. (1973) Professor  
B.A. 1965 Antioch College  
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Graf, Martin, Assistant Professor  
Gudas, Stephen A. (1998) Associate Professor  
Haar, Jack L. (1971) Professor  
B.S. 1964 Capital University  
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Ph.D. 1970 Ohio State University  
Jacobs, Kimberle M., Assistant Professor  
Johnson, James H. (1971) Professor  
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Krieg Jr., Richard J. (1975) Professor  
B.S. 1967 University of San Francisco  
M.S. 1969 and Ph.D. 1975 University of California, Los Angeles  
Leichnetz, George R. (1970) Professor  
B.S. 1964 Wheaton College  
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Mayhew, Thomas P.\*, Associate Professor  
McClung, John Ross (1974) Professor  
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McQuiston, Adam R., Assistant Professor  
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Michener, Lori\*, Associate Professor  
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Ph.D. 1972 University of Tennessee  
Wei, Enoch P., Associate Professor

#### Emeriti faculty

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Craig, Shirley, Associate Professor Emerita  
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### Department of Anesthesiology

#### Carlos U. Arancibia

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### **Department of Biochemistry**

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## Department of Biostatistics

### Walter H. Carter Jr.

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Johnson, Robert E., Associate Professor  
Ko, Daijin (1985) Professor  
B.S. 1974 and M.S. 1977 Yonsei University, Korea  
M.S. 1982 and Ph.D. 1985 University of Washington  
McClish, Donna K. (1988) Associate Professor  
B.A. 1972 and M.A. 1973 University of Michigan  
Ph.D. 1979 University of North Carolina, Chapel Hill  
Penberthy, Lynne T. \*, Assistant Professor  
Ramakrishnan, Viswanathan, Associate Professor  
Shaw, James E. \*, Associate Professor  
Smith, Wally R. \*, Associate Professor  
Witten, Tarynn M., Research Assistant  
Wolfe, Luke G. \* (1982) Assistant Professor  
B.A. 1980 Bridgewater College  
M.S. 1982 Virginia Commonwealth University

### Emeriti faculty

Keefe, William E., Associate Professor Emeritus  
B.S. 1959 and M.S. 1964 Virginia Polytechnic  
Institute and State University  
Ph.D. 1967 Medical College of Virginia  
Kilpatrick Jr., S. James, Professor Emeritus  
B.S. 1954 Queens University of Belfast, United  
Kingdom  
M.S. 1957 Queens University of Belfast, United  
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Ph.D. 1960 Queens University of Belfast, United  
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### Affiliate faculty

Carchman, Richard, Affiliate Professor  
Chinchilli, Vernon M., Affiliate Professor  
Flora, Roger E., Affiliate Associate Professor  
Kish Jr., Charles W., Affiliate Assistant Professor  
Peace, Karl, Affiliate Professor

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## Department of Dermatology

### Algin B. Garrett

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B.S. 1974 Bucknell University  
M.D. 1978 Pennsylvania State University

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M.D. 1983 Case Western Reserve University

### Emeriti faculty

Blaylock, W. Kenneth, Professor Emeritus  
B.S. 1953 King College  
M.D. 1958 Medical College of Virginia  
Rothberg, Simon, Professor Emeritus  
B.S. 1948 Columbia University  
M.S. and Ph.D. 1956 Georgetown University

### Clinical faculty

Blanchard III, Lawrence, Clinical Instructor  
Booth, Jerry C., Associate Clinical Professor  
Corvette, Donna M., Assistant Clinical Professor  
Gutierrez, Fabio E. \*, Assistant Clinical Professor  
Hoover, Shelley K., Assistant Clinical Professor  
Hudgins, Earl M., Clinical Professor  
Kites, Eileen C., Clinical Instructor  
Konerding, Hazle S., Assistant Clinical Professor  
McMullan, Francis H., Clinical Professor  
Patterson, James W. \*, Clinical Professor  
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Seely, Georgia, Assistant Clinical Professor

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## Department of Emergency Medicine

### Joseph P. Ornato

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Barbee, Robert Wayne, Assistant Professor  
Bartholomew, Matthew, Assistant Professor  
Bartle, Samuel T., Assistant Professor  
Christiansen, Gregory M., Assistant Professor  
Chuidian, Francis X., Assistant Professor  
Cuttino, Charles M. (1998) Assistant Professor  
B.S. 1990 James Madison University  
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B.S. 1970 College of Mount St. Joseph-on-the-Ohio  
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Loria, Roger M. \*, Professor  
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### Clinical faculty

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Heffner, Alan C., Clinical Instructor  
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Ortiz, Edward A., Clinical Instructor  
Overton, Jerry, Clinical Instructor  
Phillips, Mary-Theresa, Clinical Instructor  
Picone, Carlos, Clinical Instructor  
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Robinson, Kenneth E., Clinical Instructor  
Saperston, Adam R., Clinical Instructor  
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## Department of Family Practice

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Woolf, Steven, Professor

### Emeriti faculty

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Johnson, Gretchen L., Assistant Clinical Professor  
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King, John G., Associate Clinical Professor  
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Kowalski, John P., Associate Clinical Professor  
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 Orritt, Eric J., Assistant Clinical Professor  
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 Ransome, Sterling, Assistant Clinical Professor  
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 Reihl, Jeffrey P., Assistant Clinical Professor  
 Reinhardt, Stephen D., Assistant Clinical Professor  
 Rentz, Anita, Assistant Clinical Professor  
 Reynolds, Louise, Assistant Clinical Professor  
 Reynolds, Todd, Assistant Clinical Professor  
 Richard, Stephen, Assistant Clinical Professor  
 Robbins, Peter H., Assistant Clinical Professor  
 Robusto, James, Associate Clinical Professor  
 Romano, Michele A., Associate Clinical Professor  
 Rose, Rosemarie, Assistant Clinical Professor  
 Rosenbaum, Charles I., Clinical Professor  
 Rosenberg, Mark J., Associate Clinical Professor  
 Royal, Frank S., Associate Clinical Professor  
 Ruiz, Rex B., Assistant Clinical Professor  
 Sandlin, Sherry A., Assistant Clinical Professor  
 Sasser Jr., Frank M., Associate Clinical Professor  
 Satchwell, Susan H., Clinical Professor  
 Saylor, Edward, Assistant Clinical Professor  
 Schanzer, Harriet, Assistant Clinical Professor  
 Scharpf, Susan, Associate Clinical Professor  
 Schwartz, Jeffrey, Assistant Clinical Professor  
 Schwartz, Richard H., Clinical Professor  
 Seigel, Steven K., Assistant Clinical Professor  
 Seiler, Sigmund P., Clinical Professor  
 Shanabrook, Kevin R., Assistant Clinical Professor  
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 Shepherd, Richard D., Assistant Clinical Professor  
 Shield Jr., James A., Clinical Professor  
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 Solan, Stuart M., Associate Clinical Professor  
 Soles, Donald Elwood, Assistant Clinical Professor  
 Somerville, Ivia J., Assistant Clinical Professor  
 Southall, Al, Associate Clinical Professor  
 Southall, Kirby, Associate Clinical Professor  
 Sparrow, Charles, Associate Clinical Professor  
 Spence, Steven N., Clinical Professor  
 Squire, Peter, Assistant Clinical Professor  
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 Stanley, Bettye D., Assistant Clinical Professor  
 Steinmetz, Marie, Assistant Clinical Professor  
 Stennett III, Thomas R., Assistant Clinical Professor  
 Strazzullo III, John F., Assistant Clinical Professor  
 Sughrue, Maura J., Associate Clinical Professor  
 Suslick, Randall, Associate Clinical Professor  
 Swensson, Erik E., Assistant Clinical Professor  
 Taylor, Michael P., Associate Clinical Professor  
 Temple Jr., Eugene, Clinical Professor  
 Thomas, Dennis L., Associate Clinical Professor  
 Tran, George, Assistant Clinical Professor  
 Tucker, Alton, Assistant Clinical Professor  
 Tucker Jr., William T., Assistant Clinical Professor  
 Tunstall, June R., Associate Clinical Professor  
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 Tweel, Theodore T., Assistant Clinical Professor  
 Verheul, John W., Assistant Clinical Professor

Vyas, Neha B., Assistant Clinical Professor  
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 Wenleder, Rudolf B., Associate Clinical Professor  
 Westfall, Roger, Assistant Clinical Professor  
 Wheat, Judith C., Assistant Clinical Professor  
 Wheeler, Robert M., Assistant Clinical Professor  
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 White, Andrew A., Associate Clinical Professor  
 White, Stuart B., Clinical Professor  
 Wigand, James P., Associate Clinical Professor  
 Williams, Marvin T., Associate Clinical Professor  
 Williams, Robert B., Associate Clinical Professor  
 Williams, Verneeta L., Assistant Clinical Professor  
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 Wineland, Richard, Assistant Clinical Professor  
 Wise, Andrew, Assistant Clinical Professor  
 Wise, James L., Assistant Clinical Professor  
 Witte, Darren S., Assistant Clinical Professor  
 Woodfin, Charlotte B., Assistant Clinical Professor  
 Woodward, Patrick M., Assistant Clinical Professor  
 Wu-Pong, David, Assistant Clinical Professor  
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## Department of Human Genetics

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Professor and Department Chair (2002)  
 Ph.D. Brandeis University

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 B.A. 1974 Swarthmore College  
 M.D. 1979 Yale University  
 Chen, Xiangning\*, Assistant Professor  
 Corey, Linda A. (1976) Professor  
 B.S. 1970 St. Francis College  
 M.S. 1972 and Ph.D. 1974 North Carolina State University  
 Eaves, Linton J. (1981) Professor  
 B.S. 1966 and Ph.D. 1970 University of Birmingham, England  
 M.A. 1979 Oxford University, England  
 D.S.C. 1980 University of Birmingham, England  
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 B.S. 1978 University of Charleston  
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 Ph.D. 1985 Virginia Commonwealth University  
 Kendler, Kenneth S.\*, Professor  
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 B.S. 1982 University of Connecticut  
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 B.S. 1954 University of the South  
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 Neale, Michael C. \*, Professor  
 Pallante, Virginia Anna, Instructor  
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 H.S.C. 1977 Jai-Hind College  
 M.B.B.S. 1982 Seth GS Medical  
 M.D. 1985 KEM Hospital  
 Rasul, Iftekhar (1990) Instructor  
 M.S.S. 1983 University of Dhaka  
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 Riley, Brien P. \*, Assistant Professor  
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 B.S. 1981 State University of New York, Bingham  
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 Ware, Joy Laurin\*, Professor  
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#### **Emeriti faculty**

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 B.S. 1941 University of South Carolina  
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#### **Affiliate faculty**

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 Carter, Anthony D., Affiliate Assistant Professor  
 Hong, Feng, Visiting Professor  
 Hong, Feng, Visiting Scientist  
 Howard-Peebles, Patricia, Affiliate Professor  
 Levinson, Gene, Affiliate Assistant Professor  
 Maddalena, Anne, Affiliate Assistant Professor  
 Neal-Smith, Florence, Affiliate Research Assistant  
 Rutter, Michael L., Affiliate Professor  
 Schulman, Daniel J., Affiliate Professor  
 Simonoff, Emily A., Affiliate Assistant Professor  
 Sprecher, Penny L., Affiliate Instructor  
 Stern, Harvey J., Affiliate Assistant Professor  
 Teague, Katherine E., Clinical Instructor  
 Van den Bree, Marianne B.M., Affiliate Assistant  
 Professor  
 Wolf, Barry, Clinical Professor

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 Fratkin, Melvin J. \*, Professor  
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 B.S. 1970 Brooklyn College  
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 B.A. 1973 University of Pennsylvania  
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 B.A. 1972 Ohio State University  
 M.A. 1975 and Ph.D. 1980 University of Alabama  
 Hylemon, Phillip B. \* (1972) Professor  
 B.S. 1967 Atlantic Christian College  
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 B.S. 1974 American University of Beirut, Lebanon  
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 Karnum, Srinivasa M., Associate Professor  
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 Laver, Joseph\*, Professor  
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 B.S. 1973 University of Georgia  
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 M.S. 1969 and Ph.D. 1974 Moscow Institute  
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 B.S. 1965 St. Michael's College  
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#### **Emeriti faculty**

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 Bradshaw, Brian T., Assistant Clinical Professor  
 Brehmer, Charles E., Clinical Instructor  
 Brodeur, James P., Assistant Clinical Professor  
 Buchsbaum, David G., Associate Clinical Professor  
 Burris, Allen S., Assistant Clinical Professor  
 Burton, William S., Associate Clinical Professor  
 Cahill, Colleen, Clinical Instructor  
 Cheifetz, Craig E., Assistant Clinical Professor  
 Chou, Yi-nan, Assistant Clinical Professor  
 Christensen, John S., Assistant Clinical Professor  
 Cisek, James E., Associate Clinical Professor  
 Cooke Charles L., Associate Clinical Professor  
 Costa, Giovanni, Associate Clinical Professor

## **Department of Internal Medicine**

### **Richard P. Wenzel**

Professor and Department Chair (1995)  
 B.S. 1961 Haverford College  
 M.D. 1965 Jefferson Medical School  
 M.S. 1986 University of London

Coutlakis, Peter J., Assistant Clinical Professor  
 Dashiell, John J., Instructor of Clinical Medicine  
 Dausch, Robert J., Assistant Clinical Professor  
 Deep, William D., Assistant Clinical Professor  
 Deschamps, John, Clinical Instructor  
 Disciascio, Germano, Professor of Clinical Cardiology  
 Douglas, Michael F. S., Assistant Clinical Professor  
 Dunnington, Gensevoort, Assistant Clinical Professor  
 Elliott, Billie, Clinical Instructor  
 Ferguson, Joseph M., Assistant Clinical Professor  
 Ferrar, William, Assistant Clinical Professor  
 Finch, Laura P., Clinical Instructor  
 Galeski III, Joseph, Assistant Clinical Professor  
 Garris-Wallace, Shelia, Assistant Clinical Professor  
 Gibson, Sandy M., Assistant Clinical Professor  
 Glazier, Richard, Clinical Instructor  
 Glynn, Francesca L., Clinical Instructor  
 Goldman, Stanley A., Assistant Clinical Professor  
 Green, Harold T., Assistant Clinical Professor  
 Gupta, Ambrish K., Assistant Clinical Professor  
 Gupta, Jyotsna, Clinical Instructor  
 Haddad, Raymond, G., Associate Clinical Professor  
 Haft, Kenneth S., Assistant Clinical Professor  
 Haithcock, Roderick, Assistant Clinical Professor  
 Han, Jiho J., Assistant Clinical Professor  
 Harden, Elizabeth, Assistant Clinical Professor  
 Hartwig, Timothy, Assistant Clinical Professor  
 Hendrix IV, Walter, Assistant Clinical Professor  
 Itskovich, Rozana A., Assistant Clinical Professor  
 Jackson, Richard A., Assistant Clinical Professor  
 Jones, Sidney R., Clinical Instructor  
 Joseph, Lerla, Assistant Clinical Professor  
 Joseph, Matthew K., Assistant Clinical Professor  
 Kaatz, Jane S., Clinical Instructor  
 Kahn Howard D., Assistant Clinical Professor  
 Kohli, Ravinder, Associate Clinical Professor  
 Koontz, Warren, Assistant Clinical Professor  
 Kunos, George\*, Affiliate Professor  
 Kupermic, Mario, Associate Clinical Professor  
 Lin, Hsing-Wu, Assistant Clinical Professor  
 Longacher Jr., Joseph, Associate Clinical Professor  
 Mann, H. Thompson, Assistant Clinical Professor  
 Margolis, Jeffrey A., Assistant Clinical Professor  
 Mauck, H. Page, Clinical Professor  
 McCue Jr., Howard, Associate Clinical Professor  
 McDaniel, James L., Assistant Clinical Professor  
 McGehee Jr., Read, Associate Clinical Professor  
 McHenry Jr, Lee, Assistant Clinical Professor  
 McKeown, Charles E., Associate Clinical Professor  
 McLeod, David A., Assistant Clinical Professor  
 Mehfood, George J., Assistant Clinical Professor  
 Miller, Michael J., Clinical Professor  
 Mincks, John C., Assistant Clinical Professor  
 Mire, Ryan D., Instructor of Clinical Medicine  
 Mirshahi, Iraj, Assistant Clinical Professor  
 Mitchell Jr., Robert E., Clinical Professor  
 Moen, Zamir V., Clinical Instructor  
 Monahan, Martin F., Assistant Clinical Professor  
 Parisi, Richard A., Associate Clinical Professor  
 Parker, Clifton, Clinical Instructor  
 Parpart, C. Fay, Clinical Instructor  
 Perlin, Jonathan B., Associate Clinical Professor  
 Phillips, Charles W., Assistant Clinical Professor  
 Pleasants, Gregory, Assistant Clinical Professor

Price III, Charles D., Assistant Clinical Professor  
 Rizk, Philip, Assistant Clinical Professor  
 Robinson, Randall, Assistant Clinical Professor  
 Rogol, Alan D., Clinical Professor  
 Rose III, Leslie W., Assistant Clinical Professor  
 Rustgi, Vinod K., Clinical Professor  
 Schnoll, Sidney H., Clinical Professor  
 Shapiro, Ellen, Assistant Clinical Professor  
 Shiry, Laura, Clinical Instructor  
 Simms, Shannon W., Clinical Instructor  
 Smallwood, Katherine, Assistant Clinical Professor  
 Sporn, I. Norman, Assistant Clinical Professor  
 Starkman, Martin, Assistant Clinical Professor  
 Steinberg, Adam N., Assistant Clinical Professor  
 Sutherland Jr., James, Clinical Instructor  
 Taschner, Brian C., Instructor of Clinical Medicine  
 Tate, Richard, Assistant Clinical Professor  
 Temple Jr., Eugene\*, Clinical Professor  
 Tiedemann, Marie T., Assistant Clinical Professor  
 Titus, C. Kent, Assistant Clinical Professor  
 Tran, Minh Q., Assistant Clinical Professor  
 Trow, Lorraine, Assistant Clinical Professor  
 Tulou, Nicholas, Assistant Clinical Professor  
 Turner, Robert T., Assistant Clinical Professor  
 Vargas, Efren, Clinical Instructor  
 Viol, Geoffrey W., Clinical Instructor  
 Vuyyuru, Sujatha, Assistant Clinical Professor  
 Wasserman, Brian, Assistant Clinical Professor  
 Wickham, James R., Clinical Instructor  
 Wigand, James P.\*, Associate Clinical Professor  
 Yanni, Leanne M., Instructor of Clinical Medicine  
 Young, Stephen C., Assistant Clinical Professor  
 Young, William H., Assistant Clinical Professor  
 Zacharias Jr., Charles, Assistant Clinical Professor  
 Zeh, Joy E., Clinical Instructor  
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## Division of Cardiology

### George W. Vetrovec

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 of Cardiology (1976)  
 B.A. 1966 and M.D. 1970 University of Virginia

Arrowood, James (1987) Associate Professor  
 B.S. 1970 University of Rhode Island  
 M.S. 1976 and M.D. 1980 Pennsylvania State  
 University  
 Clemo, Simon Henry (1992) Associate Professor  
 B.A. 1981, Ph.D. 1986 and M.D. 1987 University of  
 Virginia  
 Cowley, Michael J. (1977) Professor  
 M.D. 1972 University of Alabama  
 Davia, James E., Associate Professor  
 Denlinger, Bethany, Assistant Professor  
 Eckberg, Dwain L. (1977) Professor  
 B.A. 1958 Wheaton College  
 M.D. 1963 Northwestern University  
 Edwards, Virginia L. (1977) Assistant Professor  
 B.S. 1972 Virginia Commonwealth University  
 M.S. 1977 Virginia Commonwealth University

Ellenbogen, Kenneth A. (1989) Professor  
 B.A. 1976 Princeton University  
 M.D. 1980 Johns Hopkins University  
 Goudreau, Evelyne (1988) Associate Professor  
 B.S. 1977 and M.D. 1981 University of Montreal  
 Hanna, Diane L. (1978) Research Assistant  
 B.S. 1978 University of Delaware  
 M.S. 1982 Virginia Commonwealth University  
 Hastillo, Andrea (1974) Associate Professor  
 B.S. 1965 and M.D. 1969 University of Pittsburgh  
 Hess, Michael L. (1971) Professor  
 B.S. 1964 St. Francis College  
 M.D. 1968 University of Pittsburgh  
 Jesse, Robert L., Associate Professor  
 Kok, Lai Chow, Assistant Professor  
 Kontos, Michael C. (1991) Assistant Professor  
 M.D. 1983 Virginia Commonwealth University  
 Kukreja, Rakesh C. (1984) Professor  
 E.S.B.S. 1974 Punjab University  
 M.S. 1977 Allahabad University  
 Ph.D. 1982 Kurukshetra University  
 Malloy, Walter N. (1992) Assistant Professor  
 B.S. 1967 Morgan State University  
 M.D. 1971 Meharry Medical College  
 Minisi, Anthony J. (1990) Associate Professor  
 B.A. 1976 and M.D. 1980 University of Pennsylvania  
 Nixon, John V. (1986) Professor  
 M.B.Ch.B. 1965 and M.D. 1982 Victoria University, U.K.  
 Paulsen, Walter H. J. (1980) Associate Professor  
 M.B.Ch.B. 1969 University of East Africa  
 Peberdy, Mary Ann (1993) Assistant Professor  
 B.A. 1980 La Salle University  
 M.D. 1984 Temple University  
 Prinz, Andreas, Associate Professor  
 Shepard, Richard K., Assistant Professor  
 Topaz, On, Professor  
 Vijayaraman, Pugazhendhi, Assistant Professor  
 Wood, Mark Allen (1991) Associate Professor  
 B.A. 1979 and M.D. 1983 University of Tennessee  
 Xi, Lei, Instructor  
 Zhao, Tingcum, Instructor

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## Division of Endocrinology and Metabolism

### John E. Nestler

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 University  
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Downs Jr., Robert W. (1983) Professor  
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Gardner, David F., Professor  
B.A. 1967 Brown University  
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## **Division of Gastroenterology**

### **Arun J. Sanyal**

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B.A. 1973 Yale University  
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Makhlouf, Gabriel M. (1970) Professor  
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Mihas, Anastasios, Professor  
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Ren, Shunlin, Assistant Professor  
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Sterling, Richard K., Associate Professor  
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Stravitz, Richard T., Associate Professor  
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B.A. 1958 Carleton College  
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Zfass, A. M. (1963) Professor  
B.A. 1953 University of Virginia  
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Jairath, Sanjeev, Assistant Clinical Professor  
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## **Division of General Medicine and Primary Care**

### **Mary D. Nettleman**

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B.S. 1977 Ohio University  
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M.S. 1993 University of Iowa

Abbey, Linda J. (1989) Associate Professor  
B.S. 1976 Muhlenberg College  
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Abdulla, Omar, Assistant Professor  
Adams, Ruma G. (1993) Assistant Professor  
M.B.Ch.B. 1986 University of Glasgow  
Armstrong, Brent A., Assistant Professor  
Ayele, Hanna, Assistant Professor  
Bajaj, Harminder P. S., Assistant Professor  
Bates, Sean L., Assistant Professor  
Beales, Julie L., Assistant Professor  
Bell, Patricia E., Assistant Professor  
Beltran-Keeling, Joyce R., Instructor  
Boling, Peter A. (1984) Professor  
B.A. 1976 Amherst College  
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Bordon, Denise L., Assistant Professor  
Brannen, Judy Lynn, Associate Professor  
Bruce, Kerry E., Assistant Professor  
Bruzese, Joseph D., Assistant Professor  
Cho, Kathie H., Assistant Professor  
Christensen, Jennifer D., Assistant Professor  
Clark III, Ralph R. (1990) Associate Professor  
B.S. 1983 College of William & Mary  
M.D. 1987 Virginia Commonwealth University  
Clemo, Frances L. W., Associate Professor  
Essah, Paulina A., Assistant Professor  
Foster, Harriet H., Assistant Professor  
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Fredrickson, Sonja K., Assistant Professor  
Freer, Steven D. (1994) Associate Professor  
B.A. 1983 University of California, Santa Cruz  
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Fulco, Frank A., Assistant Professor  
Gadiwalla, Seema A., Assistant Professor  
Genina, Vera, Assistant Professor  
Gentili, Angela, Associate Professor  
Gianola, Katherine, Assistant Professor  
Gill, Ranjodh Singh, Assistant Professor  
Godschalk, Michael F., Professor  
Hazelrigg, Monica R., Assistant Professor  
Higgins, Leigh Ann, Assistant Professor  
Hillner, Bruce E. (1984) Professor  
B.A. 1975 Cornell University  
M.A. 1984 Harvard University  
M.D. 1979 University of Chicago

Huber, Elizabeth C. (1989) Associate Professor  
B.S. 1982 and M.D. 1986 University of North Carolina  
Jain, Kalpana, Assistant Professor  
Johnson, Betty Anne, Professor  
Kanamori, Cesar I., Assistant Professor  
Kelso, Catherine M., Assistant Professor  
Klein, Wendy S., Associate Professor  
B.S. 1985 Boston University  
M.D. 1984 Case Western  
Kuno, Helen L., Assistant Professor  
Link, Kurt, Assistant Professor  
McGurl, John David, Assistant Professor  
McMurtry, Cynthia, Associate Professor  
Meyers, Margaret Elizabeth (1991) Assistant Professor  
B.S. 1982 University of North Carolina, Greensboro  
M.S. 1987 Virginia Commonwealth University  
Mulligan, Thomas, Professor  
Narla, Shireesha, Assistant Professor  
Panebianco, Deborah I., Assistant Professor  
Patel, Sonal, Assistant Professor  
Paulson, Daniel M., Assistant Professor  
Perry, Robert P. (1979) Professor  
A.B. 1972 Harvard University  
M.D. 1976 University of Rochester  
Pinson, Andy G. (1992) Associate Professor  
B.S. 1983 Furman University  
M.D. 1987 Medical University of South Carolina  
Polatty, Rose Crystal, Associate Professor  
Ranjan, Aparnas, Assistant Professor  
Rao, T. Premasudha, Assistant Professor  
Reddy, Sashidhar N., Assistant Professor  
B.A. 1990 Austin College  
M.D. 1994 University of Texas  
Retchin, Sheldon M., Professor  
Roberson, Margaret, Associate Professor  
Rogers, Alfred H. (1992) Associate Professor  
B.S. 1985 Emory University  
M.D. 1989 University of Tennessee  
Rowe, Joy P. (1994) Associate Professor  
M.D. 1987 Virginia Commonwealth University  
Schmitt, James K., Professor  
Schroeder, Diane L., Associate Professor  
Selby-Penczak, Rachel, Assistant Professor  
Shah-Pandya, Sonia, Assistant Professor  
Sigworth, Stephen K., Assistant Professor  
Silvia, Livia, Assistant Professor  
Stuckey, Charles P., Assistant Professor  
Tarkington, Phillip E., Assistant Professor  
Thakral-Saaling, Vibha, Assistant Professor  
Tully, Christine L., Assistant Professor  
Weaver, Michael F., Assistant Professor  
Willett, Rita, Associate Professor  
Witherspoon, John M. (1977) Professor  
A.B. 1962 and M.D. 1967 Duke University  
M.P.H. 1977 Harvard University  
Yanni, Leanne M., Assistant Professor  
Yusi-Lenn, Almira Udarbe, Assistant Professor

### **Clinical faculty**

Bruzese, Vivian, Assistant Clinical Professor  
Connor, Anita G., Clinical Instructor  
Fidler, Richard L., Clinical Instructor

Higginson, Robert T., Clinical Instructor  
 Jarrett, Mary K., Clinical Instructor  
 Johnson, Douglas, Clinical Instructor  
 Kenny, Coleen P., Clinical Instructor  
 Kirby, Karen, Clinical Instructor  
 Kuehn, Jacqueline J., Clinical Instructor  
 Kyle, Cynthia B., Clinical Instructor  
 Lamberta, John C., Clinical Instructor  
 McElroy, Martha Lynne, Clinical Instructor  
 McMahon, Patricia M., Clinical Instructor  
 Moore, Rebecca F., Clinical Instructor  
 Page, Deron O., Clinical Instructor  
 Parsons, Pamela L., Clinical Instructor  
 Pinson, Janet, Clinical Instructor  
 Reid-Anderson, Ann, Clinical Instructor  
 Roberts, Charlotte S., Clinical Instructor  
 Rogers, Mary S., Clinical Instructor  
 Rollins, Cindy F., Clinical Instructor  
 Smith, Virginia S., Clinical Instructor  
 Wheeler, Jo Lynn, Clinical Instructor  
 Wilson, Mary S., Clinical Instructor

## Division of Hematology/Oncology

### Thomas J. Smith

Professor and Head, Division of  
 Hematology/Oncology  
 B.S. 1974 University of Akron  
 M.D. 1979 Yale University

Baker Jr., Sherman, Associate Professor  
 Carr Jr., Marcus E., Professor  
 Chung, Harold M., Assistant Professor  
 Dai, Yun, Instructor  
 Edwards, Richard W. (1987) Research Assistant  
 B.S. 1982 University of Iowa  
 B.S. 1975 Western Illinois University  
 Ginder, Gordon Dean, Professor  
 Grant, Steven (1987) Professor  
 B.S. 1969 City College of New York  
 M.D. 1973 Mount Sinai School of Medicine  
 Hackney, Mary Helen (1992) Associate Professor  
 B.S. 1979 University of North Carolina, Chapel Hill  
 M.S. 1982 University of North Carolina, Charlotte  
 M.D. 1988 East Carolina University  
 Harada, Hisashi, Assistant Professor  
 Krystal, Geoffrey W., Professor  
 Lyckholm, Laurel J. (1995) Associate Professor  
 McCardell, Kathleen A., Assistant Professor  
 McCarty John M., Associate Professor  
 Perkins, E. Brent, Assistant Professor  
 Roberts, John D. (1993) Professor  
 A.B. 1972 Harvard University  
 M.D. 1976 University of Pennsylvania  
 Rosato, Roberto R., Assistant Professor  
 Shaw, James E. (1994) Associate Professor  
 M.D. 1985 University of California, Los Angeles  
 M.P.H. 1994 University of North Carolina, Chapel Hill  
 Smith, Wade K. (1975) Associate Professor  
 A.B. 1959 Oberlin College  
 M.D. 1963 Johns Hopkins University  
 Warshamana-Greene, G. Sakuntala, Assistant  
 Professor  
 Yu, Chunrong Jane, Instructor

### Clinical faculty

Coyne, Patrick J., Clinical Instructor  
 Desch, Christopher, Associate Clinical Professor  
 Marsh, John C., Clinical Professor  
 Mitchell, R. Brian, Assistant Clinical Professor

## Division of Infectious Diseases

### Gordon L. Archer

Professor of Internal Medicine and Head, Division  
 of Infectious Diseases (1975)  
 B.A. 1965 Washington and Lee University  
 M.D. 1969 University of Virginia

Fisher, Evelyn J. (1992) Associate Professor  
 M.D. 1966 Wayne State University  
 Ingroff, Victoria Espinel, Associate Professor  
 Jacobson, Eric S., Professor  
 Lavoie, Suzanne (1992) Associate Professor  
 B.S. 1982, B.S. 1982 and M.D. 1986 University of  
 Massachusetts  
 Markowitz, Sheldon M. (1975) Professor  
 B.S. 1964 University of Richmond  
 M.D. 1968 Medical College of Virginia  
 M.S. 1978 Virginia Commonwealth University  
 Monroe, Sara G. (1986) Associate Professor  
 B.A. 1971 New York University  
 M.D. 1980 Rush Medical College  
 Nixon, Daniel E., Assistant Professor  
 Wong, Edward S., Professor

## Division of Nephrology

Digiovanni, Susan R. (1995) Assistant Professor  
 M.D. 1984 Virginia Commonwealth University  
 Feldman, George, Professor  
 Gehr, Todd W. B. (1987) Professor  
 B.S. 1977 and M.S. 1978 Purdue University  
 M.D. 1981 West Virginia University  
 King, Anne L. (1985) Associate Professor  
 A.B. 1973 Bryn Mawr College  
 M.D. 1980 University of Pennsylvania  
 Kirschbaum, Barry B. (1977) Associate Professor  
 B.A. 1961 Columbia College  
 M.D. 1965 Washington University  
 Mogyrosi, Andras, Assistant Professor  
 Ripley, Elizabeth B. D. (1991) Associate Professor  
 B.S. 1982 Meredith College  
 M.D. 1986 Virginia Commonwealth University  
 Sica, Domenic A., Professor  
 Vinnikova, Anna K., Assistant Professor

### Clinical faculty

Drewnowska, Krystyna, Assistant Clinical Professor  
 Silverman, Bruce A., Assistant Clinical Professor

## Division of Pulmonary Disease

### Alpha A. Fowler III

Professor and Eminent Scholar and Head,  
 Division of Pulmonary Disease (1982)  
 M.D. 1975 Medical College of Georgia

Ahmed, Mateen, Assistant Professor  
 Bechard, D. E. (1983) Associate Professor  
 Brath, Lisa (1993) Assistant Professor  
 B.S. 1984 Texas A & M University  
 M.D. 1988 University of Texas, Dallas  
 Cooper, Kevin R. (1979) Professor  
 B.S. 1969 Boston College  
 M.D. 1973 State University of New York  
 DeWit, Marjolein, Assistant Professor  
 Fairman, R. Paul (1977) Professor  
 B.S. 1968 Johns Hopkins University  
 M.D. 1972 University of Missouri  
 Ferro, Thomas J., Professor  
 Fisher, Bernard J. (1982) Research Assistant  
 B.S. 1981 Virginia Polytechnic Institute and State  
 University  
 B.S. 1987 Virginia Commonwealth University  
 Ghosh, Shobha, Assistant Professor  
 Glauser, Frederick, Professor  
 Moses, Leonard, Associate Professor  
 Polatty, Rose Crystal (1983) Associate Professor  
 B.S. 1973 Emory University  
 M.D. 1977 Medical College of Georgia  
 Sessler, Curtis N. (1985) Professor  
 B.A. 1975 Miami University  
 M.D. 1979 University of Cincinnati

### Clinical faculty

Hamrick III, Richard M., Assistant Clinical Professor  
 Rao, Venkatarama K., Assistant Clinical Professor

## Division of Quality Health Care

### Wally R. Smith

Associate Professor and Head, Division of Quality  
 Health Care (1991)  
 B.A. 1977 Harvard University  
 M.D. 1981 University of Alabama

Beveridge, Clay, Assistant Professor  
 Daly, Denise, Instructor  
 Edmond, Michael B. (1995) Associate Professor  
 B.S. 1982 Fairmont State College  
 M.D. 1986 West Virginia University  
 M.P.H. 1991 University of Pittsburgh  
 Penberthy, Lynne T., Assistant Professor  
 Teklu, Abraham, Assistant Professor

### Clinical faculty

Alvanzo, Anika A. H., Clinical Instructor  
 Austin, Warren, Instructor of Clinical Medicine  
 Poses, Roy M., Associate Clinical Professor  
 Varghese, Saji Sarah, Clinical Instructor

## Division of Rheumatology, Allergy and Immunology

### Lawrence B. Schwartz

Professor, Eminent Scholar and Head, Division of  
 Rheumatology, Allergy and Immunology (1983)  
 B.A. 1970 University of Illinois  
 M.D. 1976 and Ph.D. 1976 Washington University

Buckley, Lenore M. (1993) Professor  
A.B. 1973 Cornell University  
M.D. 1977 University of Rochester

Daffern, Pamela J., Assistant Professor

Fukuoka, Yoshihiro, Assistant Professor

Kepley, Christopher L., Assistant Professor

Min, Hae Ki, Assistant Professor

Moxley, George F. (1979) Associate Professor  
B.A. 1972 Kansas State University  
M.D. 1976 Washington University

Oskeritzian, Carole A., Assistant Professor

Roberts Jr., William N. (1986) Associate Professor  
B.S. 1973 Duke University  
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Sanders, Karen M., Professor

Wise, Christopher M. (1992) Professor  
B.S. 1973 and M.D. 1977 University of North Carolina, Chapel Hill

#### **Emeriti faculty**

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Owen Jr., Duncan S., Professor Emeritus

Ruddy, Shaun, Professor Emeritus

#### **Clinical faculty**

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Showalter, Andra Genese, Assistant Clinical Professor

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### **Department of Legal Medicine**

#### **Marcella F. Fierro**

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Hadfield, M G\*, Professor

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#### **Clinical faculty**

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Crowder, Lina Sue\*, Associate Clinical Professor

Gormley, William T., Associate Clinical Professor

Gunther, Wendy M.\*, Assistant Clinical Professor

Hancock, Thomas F., Lecturer

Kay, Deborah, Assistant Clinical Professor

Keller, Suzanne J., Clinical Instructor

Kinnison, Elizabeth, Assistant Clinical Professor

Majette, R. Shawn, Lecturer

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McKeown, Ashley H., Assistant Clinical Professor

McMenamin, Joseph P., Associate Clinical Professor

Pearson, Julia M., Assistant Clinical Professor

Revercomb, Carolyn H., Assistant Clinical Professor

Rozovsky, Fay A., Associate Clinical Professor

Saady, Joseph\*, Associate Clinical Professor

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Wanger, Gregory P., Assistant Clinical Professor

\* Joint or secondary appointment

### **Massey Cancer Center**

#### **Gordon D. Ginder**

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Baker, Maureen J., Assistant Professor

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Nagarkatti, Mitzi\*, Professor

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Smith, Treeda R., Instructor

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### **Department of Microbiology and Immunology**

#### **Dennis E. Ohman**

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Cabral, Francine M. (1979) Professor  
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Huff, Thomas F. (1985) Professor  
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Hylemon, Phillip B. (1972) Professor  
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McCoy, Kathleen (1988) Associate Professor  
B.S. 1976 St. John Fisher College  
M.S. 1979 and Ph.D. 1983 University of Washington

McKallip, Robert J., Assistant Professor

McVoy, Michael\*, Associate Professor

Mikkelsen, Ross\*, Professor

Munro, Cindy L.\*, Assistant Professor

Nagarkatti, Mitzi, Professor

Nagarkatti, Prakash S.\*, Professor

O'Neal, Charles H. (1968) Associate Professor  
B.S. 1957 Georgia Institute of Technology  
Ph.D. 1963 Emory University

Ozaki, Luiz S., Associate Professor

Poklis, Alphonse\*, Professor

Povirk, Lawrence F.\*, Professor

Reynolds, Kevin A.\*, Professor

Rogers, Jeffrey D.\*, Assistant Professor

Ryan, John J.\*, Assistant Professor

Schenkein, Harvey A.\*

Schwartz, Lawrence B.\*, Professor

Straus, David B., Associate Professor

Taylor, Shirley M. (1993) Assistant Professor  
B.S. 1974 University of Cape Town, South Africa  
B.S. 1976 and M.S. 1977 University of Stellenbosch, South Africa  
Ph.D. 1981 University of Southern California



Tew, John G. (1972) Professor  
B.S. 1966, M.S. 1967 and Ph.D. 1970 Brigham Young University  
Valerie, C. Kristoffer\*, Professor  
Wen, Limin, Assistant Professor  
Wu, Feng-Sheng\*, Associate Professor  
Xu, Ping, Assistant Professor  
Yager, Dorne\*, Assistant Professor

#### **Emeriti faculty**

Bradley, S. Gaylen, Dean Emeritus  
B.A. 1950 and B.S. 1950 State University of Southwest Missouri  
M.S. 1952 and Ph.D. 1954 Northwestern University  
Coleman, Philip H., Professor Emeritus  
D.V.M. 1956 University of Georgia  
M.S. 1959 and Ph.D. 1959 University of Wisconsin  
Formica, Joseph V., Associate Professor Emeritus  
Shadomy, H. Jean, Professor Emerita  
B.A. 1956, M.A. 1958 and Ph.D. 1963 University of California, Los Angeles

#### **Affiliate faculty**

Carlson, Patricia L., Affiliate Assistant Professor  
Fischer-Stenger, Krista, Affiliate Assistant Professor  
Pettit, Denise A., Affiliate Assistant Professor  
Toney, Denise M., Affiliate Assistant Professor  
Weymouth, Lisa A., Affiliate Assistant Professor  
Whiteman, Leslie, Affiliate Assistant Professor

\* Joint or secondary appointment

### **Department of Neurology**

#### **Alan R. Towne**

Associate Professor and Department Chair

Baron, Mark S., Associate Professor  
Bekenstein, Jonathan W., Assistant Professor  
Churn, Severn B. (1994) Associate Professor  
B.S. 1984 The College of William and Mary  
M.S. 1986 University of Richmond  
Ph.D. 1991 Virginia Commonwealth University  
Costanzo, Richard M.\*, Professor  
Delorenzo, Robert John, Professor  
Fishman, Simon, Assistant Professor  
Garnett, William R.\*, Professor  
Gatuslao Jr., Hernan T., Assistant Professor  
Joseph, Lenore N., Assistant Professor  
Nyquist, Paul, Assistant Professor  
Pavot, Pierre, Assistant Professor  
Saul, Robert, Associate Professor  
Sombati, Sompong (1987) Assistant Professor  
B.A. 1973 University of Kansas  
M.S. 1977 Mahidol University, Thailand  
Ph.D. 1983 University of Oregon

#### **Emeriti faculty**

Harbison, John W., Professor Emeritus  
B.A. 1959 and M.D. 1962 University of Iowa  
Suter, Cary G., Professor Emeritus

#### **Clinical faculty**

Beach, Woodford\*, Assistant Clinical Professor  
Boggs, Jane G., Associate Clinical Professor  
Brush, John J., Assistant Clinical Professor  
Calabrese, Vincent, Clinical Professor  
Cohen, Robert J., Assistant Clinical Professor  
Cooper, J. Bryan, Clinical Instructor  
Hansen, Robert B., Assistant Clinical Professor  
Harris, J. Kim, Assistant Clinical Professor  
Hennessey IV, John J., Assistant Clinical Professor  
Isaacs, Edward R., Associate Clinical Professor  
McGee, Francis, Clinical Professor  
O'Bannon, John, Associate Clinical Professor  
Paschall, Robert M., Assistant Clinical Professor  
Richards, Nelson G., Clinical Professor  
Taylor, John R., Clinical Professor  
Vasconcelos, Olavo, Assistant Clinical Professor  
Yarlagadda, Yamini, Assistant Clinical Professor

\* Joint or secondary appointment

### **Division of Child Neurology**

#### **John M. Pellock**

Professor and Head, Division of Child Neurology (1965)  
B.A. Johns Hopkins University  
M.S. Fairleigh Dickinson University  
M.D. St. Louis University

Kernitsky, Lydia, Assistant Professor  
Leszczyszyn, David J., Assistant Professor  
Morton, Lawrence, Assistant Professor  
Myer, Edwin C. (1973) Professor  
M.B.Ch.B. 1956 University of Witwatersrand, Union of South Africa  
Shapiro, Steven (1988) Associate Professor  
B.S. 1971 Syracuse University  
M.D. 1975 University of Pittsburgh

### **Division of Neuro-ophthalmology**

#### **Warren L. Felton III**

Associate Professor and Head, Division of Neuro-ophthalmology (1985)  
B.A. 1973 and M.D. 1980 University of Oklahoma

### **Division of Neuro-physiology**

Corrie, W. Stephen (1987) Associate Professor  
B.A. 1962 Reed College  
M.D. 1966 Washington University  
Leshner, Robert T. (1980) Professor  
A.B. 1965 and M.D. 1969 Cornell University  
Waterhouse, Elizabeth J. (1994) Associate Professor  
M.D. 1988 Harvard University

### **Department of Neurosurgery**

Broadus, William C. (1991) Associate Professor  
B.A. 1975 Cornell University  
Ph.D. 1982 and M.D. 1984 Case Western Reserve University

Bullock, M. Ross (1992) Professor  
M.B.Ch.B. 1975 Birmingham University  
F.R.C.S. 1980 and F.R.C.S. 1983 Royal College of Surgeons of Edinburgh  
Chen, Zhi-Jian, Instructor  
Dunbar, Jana G., (1981) Research Assistant  
B.S. 1979 and M.S. 1987 Virginia Commonwealth University  
Fillmore, Helen, Assistant Professor  
Graham, Robert Scott, Assistant Professor  
Holloway, Kathryn (1990) Associate Professor  
B.S. 1980 and M.D. 1984 Rutgers University  
Marmarou, Anthony (1982) Professor  
B.S. 1959 Drexel University  
M.S. 1966 University of Pennsylvania  
Ph.D. 1973 Drexel University  
Reeves, Thomas M., Assistant Professor  
Rice, Ann C., Instructor  
Ward, John D. (1991) Professor  
B.S. 1966 Xavier University  
M.D. 1970 University of Cincinnati

#### **Clinical Faculty**

White, William R., Clinical Instructor

### **Department of Obstetrics and Gynecology**

#### **John W. Seeds**

Professor and Department Chair (1994)  
B.S. 1968 University of Washington  
M.D. 1972 University of Virginia

Boardman, Cecilia H., Assistant Professor  
Bodurtha, Joann N.\*, Associate Professor  
Borzelleca Jr., Joseph F. (1991) Assistant Professor  
B.A. 1977 University of Virginia  
M.D. 1981 Virginia Commonwealth University  
Brock, Ellen L. (1992) Associate Professor  
B.S. 1977 University of South Carolina  
M.D. 1981 Medical University of South Carolina  
Cohen, Stephen A. (1994) Associate Professor  
B.S. 1971 Old Dominion University  
M.D. 1975 Virginia Commonwealth University  
Gill, Edward J. (1995) Associate Professor  
B.A. 1982 College of Holy Christ  
M.D. 1986 Tufts University  
Girerd, Philippe (1992) Assistant Professor  
B.A. 1979 Rutgers University  
M.D. 1983 University of Medicine and Dentistry of New Jersey  
Gutcher, Gary R.\*, Professor  
Gutierrez, Marian E., Assistant Professor  
Hurt, Waverly Glenn (1968) Professor  
B.S. 1960 Hampden-Sydney College  
M.D. 1964 Medical College of Virginia  
Jackson-Cook, Colleen K.\*, Associate Professor  
Kauma, Scott W. (1988) Professor  
B.A. 1978 Lawrence University  
M.D. 1982 University of Wisconsin  
Klein, Wendy S.\*, Associate Professor  
Kornstein, Susan G.\*, Professor and Division Head  
Lanni, Susan M., Assistant Professor

Mecklenberg, Fred E., Professor  
 Nestler, John E. \*, Professor and Division Head  
 Nichols, Catherine M., Assistant Professor  
 Peng, Thomas C. (1989) Professor  
     B.A. 1976 Johns Hopkins University  
     M.D. 1980 University of Connecticut  
 Pierce Jr., John G. \* (1999) Assistant Professor  
 Richards-Bullock, Amanda (1992) Associate Professor  
     M.B.Ch.B. 1976 Capetown University  
     M.R.C.O. 1982 Royal College of Surgeons of Edinburgh  
 Rozycki, Henry J. \*, Associate Professor  
 Stovall, Dale W., Associate Professor  
 Walsh, Scott W. (1990) Professor  
     B.S. 1970, M.S. 1972 and Ph.D. 1975 University of Wisconsin  
 Wyman, Jean F. \*, Assistant Professor

#### **Emeriti faculty**

Board, John, Professor Emeritus  
     B.S. 1953 Randolph-Macon College  
     M.D. 1955 Medical College of Virginia  
 Collins, Judith B., Associate Professor Emerita  
 Dunn, Leo J., Professor Emeritus  
     B.A. 1952 Hofstra University  
     M.D. 1956 Columbia University  
 Goplerud, Dean, Professor Emeritus  
     B.A. 1951 St. Olaf College  
     M.D. 1955 State University of Iowa  
 Hoge, Randolph H., Professor Emeritus  
     B.S. 1924 University of Virginia  
     M.D. 1928 Harvard University

#### **Clinical faculty**

Adkins, William E., Associate Clinical Professor  
 Battista, Joseph V., Clinical Instructor  
 Blanton, Erika H., Clinical Instructor  
 Bodamer, Cheryl N., Clinical Instructor  
 Bruder, Karen L., Clinical Instructor  
 Buettner, Karin L., Clinical Instructor  
 Christmas, James T., Assistant Clinical Professor  
 Cornell, George W., Clinical Professor  
 Dausch, Susan M., Clinical Instructor  
 Davis, Victoria, Clinical Instructor  
 Debra, Kwasi A., Assistant Clinical Professor  
 Edelstein Michael C., Clinical Instructor  
 Feore, J. Coleman, Assistant Clinical Professor  
 Frederici, Benigno D., Assistant Clinical Professor  
 Gentile, Frank, Assistant Clinical Professor  
 Gianfortoni, Joseph G., Assistant Clinical Professor  
 Goodman, Floyd Keith, Assistant Clinical Professor  
 Gutliph, Jo Anne, Clinical Instructor  
 Hamilton, Stuart H., Clinical Instructor  
 Hirata, Alice J., Clinical Instructor  
 Hooper, Ethel Marie, Assistant Clinical Professor  
 Isaacs, Christine R., Clinical Instructor  
 Johnson, Bruce E., Clinical Instructor  
 Jones, James E., Clinical Instructor  
 Jones, Paul A., Clinical Instructor  
 Knapp, Karen, Assistant Clinical Professor  
 Levin, Beth E., Assistant Clinical Professor  
 Lucas, Jerry A., Assistant Clinical Professor  
 Macivor, Duncan C., Clinical Instructor  
 Maizels, Max Sam, Clinical Instructor  
 Maraist, Adrienne L., Assistant Clinical Professor

Matt, Dennis, Associate Clinical Professor  
 McGhee, Pamela Hall, Clinical Instructor  
 Minor, Philip L., Clinical Instructor  
 Mohr, Catherine R., Assistant Clinical Professor  
 Moore, Gregory P., Clinical Instructor  
 O'Connell, Nan G., Clinical Instructor  
 Olenik, Lisa, Clinical Instructor  
 Oredein, Olugbenga, Clinical Instructor  
 Paul, Kristin L., Clinical Instructor  
 Petres, Robert E., Clinical Professor  
 Pyatak, Peter S., Clinical Instructor  
 Rabhan, Nathan H., Clinical Instructor  
 Rinehardt, Richard, Clinical Instructor  
 Roberts, Keith M., Clinical Instructor  
 Rosenberg, Sanford, Assistant Clinical Professor  
 Rowe, Bruce C., Assistant Clinical Professor  
 Royal, Harry W., Assistant Clinical Professor  
 Sawyer, Mary Jo, Assistant Clinical Professor  
 Sayegh, Sue Kelly, Clinical Instructor  
 Schoeffler, Edmund, Clinical Instructor  
 Segreti, Eileen M., Associate Clinical Professor  
 Steingold, Kenneth, Assistant Clinical Professor  
 Tate, Alexandra, Clinical Instructor  
 Thomas III, Pendleton E., Clinical Instructor  
 Tidey, George F., Assistant Clinical Professor  
 Van Tuyle, Jessica, Clinical Instructor  
 Weatherford, Shannon R., Clinical Instructor  
 Wilbanks, Peter, Clinical Instructor  
 Wisgirda, Jean, Clinical Instructor  
 Zedler, Peter A., Assistant Clinical Professor

\* Joint or secondary appointment

### **Department of Ophthalmology**

#### **Robert C. Allen**

Professor and Department Chair (1994)  
 M.D. 1975 University of Virginia

Benson, William H. (1992) Associate Professor  
     B.A. 1982 Northwestern University  
     M.D. 1986 West Virginia University  
 Chavis, Pamela S., Associate Clinical Professor  
 Felton III, Warren L. \*, Associate Professor and Division Head  
 Hoyle, Laura Sharon, Instructor  
 Mahmood, Muneera A., Associate Clinical Professor  
 Schwartz, Stephen G., Assistant Professor  
 Sporn, Amy Miller (1996) Assistant Professor  
     B.S. 1987 and O.D. 1989 Indiana University

#### **Emeriti faculty**

Guerry III, DuPont, Professor Emeritus  
     B.S. 1934 Furman University  
     M.D. 1938 University of Virginia  
     D.Med.Sc. 1944 Columbia University  
 Nooney Jr., Thomas W., Professor Emeritus  
     B.A. 1942 Trinity College  
     B.S. 1948 and O.D. 1949 Los Angeles College of Ophthalmology  
     M.S. 1961 University of Rochester  
     Ph.D. 1970 Virginia Commonwealth University  
 Wiesinger, Herbert, Professor Emeritus

#### **Clinical faculty**

Astruc Jr., Juan A., Clinical Instructor  
 Blair, Charles J., Associate Clinical Professor  
 Bundy III, Walter E., Associate Clinical Professor  
 Caldwell, John B. H., Associate Clinical Professor  
 Campana, Stephen J., Clinical Instructor  
 Carney, Marcia D., Associate Clinical Professor  
 Combs, James L., Associate Clinical Professor  
 Cooper, Geoffrey G., Assistant Clinical Professor  
 Ebert, Eleanore M., Assistant Clinical Professor  
 Ferguson Jr., James G., Clinical Professor  
 Guerry, R. Kennon, Affiliate Associate Professor  
 Gupta, Pranay, Clinical Instructor  
 Hamby, Debra A., Assistant Clinical Professor  
 Jacey, Robert W., Assistant Clinical Professor  
 Leroux, David, Assistant Clinical Professor  
 Lipstock, Kenneth, Assistant Clinical Professor  
 MacMillan, David, Assistant Clinical Professor  
 Mandell, Barry, Assistant Clinical Professor  
 McNeer, Keith W., Clinical Professor  
 Sakowski Jr., Anthony D., Associate Clinical Professor  
 Salazar, Ivan G. Castillo, Clinical Instructor  
 Sanborn, George E., Clinical Professor  
 Silbert, David Irving, Clinical Instructor  
 Smith, Lindley T., Associate Clinical Professor  
 Stevens Jr., Garth, Associate Clinical Professor  
 Tabassian, Ali R., Assistant Clinical Professor  
 Wagner, Alan, Assistant Clinical Professor  
 Wortham, V. Edwin, Assistant Clinical Professor  
 Zuravleff, Jeffrey John, Associate Clinical Professor

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### **Department of Orthopedic Surgery**

#### **Robert S. Adelaar**

Professor and Department Chair (1976)  
 B.S. 1966 and B.A. 1967 Lehigh University  
 M.D. 1970 University of Pennsylvania

Beckman, Matthew J. \*, Assistant Professor  
 Boardman, Norman D., Assistant Professor  
 Cardea, John A., Professor  
     M.D. 1966 West Virginia University  
 Foster, William C., Associate Professor  
 Loughran, Thomas P. (1983) Associate Professor  
     B.S. 1973 The College of William and Mary  
     M.D. 1977 Virginia Commonwealth University  
 Mest, Simon J., Assistant Professor  
 Nogi, Jay (1979) Associate Professor  
     A.B. 1968 University of Rochester  
     M.D. 1971 Jefferson Medical College  
 Patterson, Ronald H. (1990) Associate Professor  
     B.S. 1965 Wake Forest University  
     B.S. 1966 North Carolina State University  
     M.D. 1971 Virginia Commonwealth University  
 Zuelzer, Wilhelm A. (1990) Associate Professor  
     M.D. 1971 and M.S. 1988 University of Texas

#### **Clinical faculty**

Atkins, Susan, Assistant Clinical Professor  
 Bowers, William H., Assistant Clinical Professor  
 Desai, Sanjay J., Assistant Clinical Professor  
 Dimartino, Paul, Associate Clinical Professor

Disler, David G. \*, Associate Clinical Professor  
 Glowacki, Keith, Assistant Clinical Professor  
 Henceroth, William, Clinical Instructor  
 Higgs, Geoffrey B., Assistant Clinical Professor  
 Irby Jr., E. Clairborne, Assistant Clinical Professor  
 Leibovic, Stephen, Assistant Clinical Professor  
 Mathews, Hallett H., Associate Clinical Professor  
 McDermott, Paul, Assistant Clinical Professor  
 McDowell, Charles, Clinical Instructor  
 Meyers, John F., Associate Clinical Professor  
 Muron, David John, Assistant Clinical Professor  
 Nachman, Herman, Assistant Clinical Professor  
 Nordt III, William E., Assistant Clinical Professor  
 Sengupta, Tappas K., Research Assistant Professor  
 Sharps, Chester, Assistant Clinical Professor  
 Urquia, David Craig, Assistant Clinical Professor  
 Wilson, Jeffrey K., Associate Clinical Professor  
 Worland, Richard L., Associate Clinical Professor  
 Young, D. Christopher, Associate Clinical Professor  
 Zaslav, Kenneth Robert, Assistant Clinical Professor

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## Department of Otolaryngology

### Aristides Sismanis

Professor and Department Chair (1980)  
 M.D. 1973 University of Athens, Greece

Costanzo, Richard M. \*, Professor  
 Dinardo, Laurence J. (1991) Associate Professor  
 B.A. 1982 Middlebury College  
 M.A. 1986 Stanford University  
 Gleason, Ann T. \*, Instructor  
 Heller, Andrew J., Assistant Clinical Professor  
 Kastetter, Sean K. \*, Instructor  
 Kazanoglu, Altug \*, Associate Professor  
 King, Michael D. (1979) Associate Professor  
 B.S. 1966 Central State University  
 M.S. 1969 Phillips University  
 Ph.D. 1976 University of Oklahoma  
 Powers, Celeste N. \*, Professor  
 Reiter, Evan R., Assistant Professor  
 Shapiro, Steven \*, Associate Professor

### Emeriti faculty

Cutler, S. James, Professor Emeritus  
 B.S. 1941 Temple University  
 M.S. 1958 The College of William and Mary  
 Flowers, Ann N., Associate Professor Emerita  
 B.S. 1943 Minnesota State College, Bemidja  
 M.S. 1949 University of Wisconsin  
 Ed.D. 1965 University of Virginia  
 Smith, Maynard P., Clinical Professor Emeritus  
 B.S. 1934 Randolph-Macon College  
 M.D. 1938 University of Virginia

### Clinical faculty

Armstrong Jr., Michael, Assistant Clinical Professor  
 Balance, John, Assistant Clinical Professor  
 Beach, Woodford, Assistant Clinical Professor  
 Butts, Frank M., Associate Clinical Professor  
 Fisher, Kimberly S., Assistant Clinical Professor

Frale, Mary Ann, Clinical Professor  
 Godin, Michael S., Assistant Clinical Professor  
 Hamid, Mohamed, Clinical Professor  
 Hayden, G. Douglas, Clinical Professor  
 Helindonis, Emmanuel, Clinical Professor  
 Powell, Jeffery, Assistant Clinical Professor  
 Shaia, Fred T., Assistant Clinical Professor  
 Shim, Jaimoon M., Clinical Professor  
 Tsukatan, Toshiaki, Visiting Assistant Professor

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## Department of Pathology

### David S. Wilkinson

Professor and Department Chair (1993)  
 B.S. 1967 Virginia Military Institute  
 Ph.D. 1971 University of Wisconsin, Madison  
 M.D. 1978 University of Miami

Abbey, Louis M. \*, Associate Professor  
 Azmi, Farrukh H., Assistant Professor  
 Burns, James C. \*, Professor  
 Carr Jr., Marcus E. \*, Professor  
 Casterline, Jeffrey L. (1999) Assistant Professor  
 Coudron, Philip E., Assistant Professor  
 Freude, Kenneth A., Assistant Professor  
 Jackson-Cook, Colleen K. \*, Associate Professor  
 Kaugars, George E. \*, Professor  
 Lippman, H. Robert, Associate Professor  
 Page, Dennis G. \*, Associate Professor  
 Page, Katherine L., Instructor  
 Pandya, Arti \*, Assistant Professor  
 Robinson, Susan E. \*, Professor  
 Sanyal, Arun J. \*, Professor  
 Schwartz, Lawrence B. \*, Professor  
 Slyter, Rodney L., Instructor  
 Svirsky, John A. \*, Associate Professor  
 Todd, William, Associate Professor

### Emeriti faculty

Allison, Marvin J., Professor Emeritus  
 B.A. 1942 College of William & Mary  
 M.A. 1947 and Ph.D. 1960 University of Pennsylvania  
 Dalton, Harry P., Professor Emeritus  
 Gander, G. William, Professor Emeritus  
 B.S. 1953 Montana State College  
 M.S. 1955 and Ph.D. 1959 Cornell University  
 Hench, Miles E., Professor Emeritus  
 B.S. 1941 Lawrence University  
 M.S. 1949 and Ph.D. 1952 University of Michigan  
 Kay, Saul, Professor Emeritus  
 B.A. 1936 New York University  
 M.D. 1939 New York Medical College  
 Lurie, Harry I., Professor Emeritus  
 B.S. 1932 and M.B.Ch.B. 1936 University of the Witwatersrand, South Africa  
 Nakoneczna, Irene, Associate Professor Emerita  
 M.D. 1949 Albert-Ludwigs University, Germany  
 Rosenblum, William I., Professor Emeritus  
 B.A. 1957 Swarthmore College  
 M.D. 1961 New York University

Vennart, George P., Professor Emeritus  
 A.B. 1948 Wesleyan University  
 M.D. 1953 University of Rochester  
 Young, Nelson F., Professor Emeritus  
 B.S. 1935 University of Washington  
 Ph.D. 1945 New York University

### Clinical faculty

Armstrong, Carl W., Associate Clinical Professor  
 Blaine, James W., Assistant Clinical Professor  
 Briere, Russell O., Associate Clinical Professor  
 Carpenter, Richard H., Assistant Clinical Professor  
 Carroll, George J., Clinical Professor  
 Cook, Sallie, Associate Clinical Professor  
 Cousar, John B., Clinical Professor  
 Deblois, Georgean G., Assistant Clinical Professor  
 Dunn, Harold P., Assistant Clinical Professor  
 Gunther, Wendy M., Assistant Clinical Professor  
 Gutierrez, Fabio E., Assistant Clinical Professor  
 Hershberg, Robert A., Associate Clinical Professor  
 Hoke Jr., Harry F., Assistant Clinical Professor  
 Hossaini, Ali A., Clinical Professor  
 Karageorge, Lampros S., Assistant Clinical Professor  
 Kay, Deborah \*, Assistant Clinical Professor  
 Klimock, Gregory, Assistant Clinical Professor  
 Kornstein, Michael J., Clinical Professor  
 McGehee Jr., Read \*, Associate Clinical Professor  
 McMullen, Francis \*, Clinical Professor  
 Newsham, Irene, Affiliate Clinical Professor  
 Patterson, James W., Clinical Professor  
 Pierce, Catherine, Clinical Instructor  
 Pinto, Carlos, Assistant Clinical Professor  
 Saady, Joseph, Associate Clinical Professor  
 Selby, Dena, Associate Clinical Professor  
 Thomas, Carolyn E., Associate Clinical Professor  
 Thomas, George W., Assistant Clinical Professor  
 Thornton, John L., Clinical Professor  
 Valentour, James C., Associate Clinical Professor

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## Division of Autopsy Pathology and Neuropathology

### Nitya R. Ghatak

Professor and Head, Division of Autopsy  
 Pathology and Neuropathology (1976)  
 M.B.B.S. 1957 University of Calcutta, India

Gerszten, Enrique, Professor  
 Hadfield, M. G. (1970) Professor  
 B.A. 1960 Brigham Young University  
 M.D. 1964 University of Utah

## Division of Cellular and Molecular Pathogenesis

### Alphonse E. Sirica

Professor and Head, Division of Cellular and  
 Molecular Pathogenesis

Holt, Shawn E., Assistant Professor  
Ware, Joy Laurin, Professor  
B.A. 1975 and Ph.D. 1979 University of North Carolina

## **Division of Clinical Pathology**

### **Richard A. McPherson**

Professor and Head, Division of Clinical Pathology(1994)  
B.S. 1969 and B.S. 1969 Massachusetts Institute of Technology  
M.D. 1973 University of California

Anderson, Frank P. (1993) Assistant Professor  
B.A. 1977 and B.S. 1980 University of Tennessee  
M.S. 1982 Louisiana Tech University  
Ph.D. 1988 Virginia Commonwealth University  
Ben-Ezra, Jonathan (1991) Professor  
B.A. 1979 and M.D. 1979 Boston University  
Miller Jr., Greg (1977) Professor  
Ph.D. 1973 University of Arizona  
Poklis, Alphonse (1987) Professor  
B.S. 1969 and Ph.D. 1974 University of Maryland  
Riley, Roger S., Associate Professor  
Roseff-Dickerson, Susan D., Assistant Professor

### **Clinical faculty**

Jesse, Janice K., Assistant Clinical Professor

## **Division of Molecular Diagnostics**

### **Carleton T. Garrett**

Professor and Head, Division of Molecular Diagnostics (1993)  
A.B. 1962 Lehigh University  
M.D. 1966 Johns Hopkins University  
Ph.D. 1977 University of Wisconsin

Elmore, Lynne, Research Associate  
Ferreira-Gonzalez, Andrea (1994) Associate Professor  
M.S. 1985 National University of Cordob  
Ph.D. 1994 George Washington University

### **Clinical faculty**

Barcus, Mary E., Assistant Clinical Professor

## **Division of Surgical Pathology and Cytopathology**

### **Celeste N. Powers**

Professor and Head, Division of Surgical Pathology and Cytopathology

Atkins, Kristen A., Assistant Professor  
Contos, Melissa J. (1988) Associate Professor  
M.D. 1998 Virginia Commonwealth University  
Demirci, Sukru Serdar, Assistant Professor  
Frable, W. J., Professor  
Grimes, Margaret M. (1990) Professor  
B.A. 1971 Rosemont College  
M.D. 1975 New York Medical College  
Massey, H. Davis, Assistant Professor

Mills, A. Scott, Professor  
B.S. 1973 University of Georgia  
M.D. 1977 Virginia Commonwealth University  
Nasim, Suhail, Associate Professor

## **Department of Pediatrics**

### **Joseph Laver**

Professor and Department Chair

Accardo, Pasquale, Professor  
Al-Mateen, Cheryl S. \*, Associate Professor  
Altieri, Michael, Professor  
Bagwell, Charles E. \*, Professor and Division Head  
Bartle, Samuel T. \*, Assistant Professor  
Bodurtha, Joann N. \*, Professor  
Buckley, Lenore M. \*, Professor  
Cohen, Robert \*, Professor  
Daugherty, Lori C., Assistant Professor  
Fisher, Robert A. \*, Professor  
Foster, Robin L. \*, Assistant Professor  
Haynes, Jeffrey H. \*, Associate Professor  
Johnson, Janet A., Assistant Professor  
Kernitsky, Lydia \*, Assistant Professor  
Krieg Jr., Richard J. \*, Professor  
Lavoie, Suzanne \*, Associate Professor  
Leszczyszyn, David J. \*, Assistant Professor  
Monasterio, Eugenio \*, Assistant Professor  
Morton, Lawrence \*, Assistant Professor  
Muniz, Antonio E. \*, Associate Professor  
Nance, Walter E. \*, Professor  
Narla, Lakshmana D. \*, Associate Professor  
Neufeld, Jacob A. \*, Associate Professor  
Orelve, Fred P. \*, Associate Professor  
Pandya, Arti \*, Assistant Professor  
Phillips, Kimberly, Instructor  
Sanchez, Miriam, Instructor  
Shapiro, Jay H. \*, Associate Professor  
Shapiro, Steven \*, Associate Professor  
Sonenklar, Neil \*, Associate Professor  
Spottswood, Stephanie E. \*, Assistant Professor  
Stern, Marilyn \*, Professor  
Swarts, Karen E., Assistant Professor  
Wohlberg, Rachel B., Assistant Professor  
Wood, Isaac \*, Associate Professor

### **Emeriti faculty**

Young, Reuben B., Professor Emeritus

### **Clinical faculty**

Abbott, Katherine, Clinical Instructor  
Abernathy, Ted R., Clinical Instructor  
Al-Mateen, Kevin Baker, Assistant Clinical Professor  
Albrecht, G. Thomas, Assistant Clinical Professor  
Allison-Bryan, Barbara, Clinical Instructor  
Andrako, John D., Assistant Clinical Professor  
Archuleta, Bob, Associate Clinical Professor  
Arkin, David L., Associate Clinical Professor  
Arnold, Gayle G., Clinical Professor  
Becke, Tania, Assistant Clinical Professor  
Bell, Sandra A., Clinical Instructor  
Beveridge, George, Assistant Clinical Professor  
Blumberg, Michael Z., Associate Clinical Professor

Boatwright III, J. W., Clinical Instructor  
Boisseau, Sandra, Assistant Clinical Professor  
Bones, J. Thomas, Assistant Clinical Professor  
Brennan, James F., Clinical Instructor  
Briggs, Addie J., Clinical Instructor  
Bright, George M., Associate Clinical Professor  
Campbell, Margaret R., Assistant Clinical Professor  
Cardone, Jennifer, Clinical Instructor  
Carr, William M., Clinical Instructor  
Chan, Winnie Man-Yee, Assistant Clinical Professor  
Chirumannilla, Sree, Clinical Instructor  
Christian, Lora G., Clinical Instructor  
Colley, Amelia H., Assistant Clinical Professor  
Curry, William L., Clinical Professor  
David, Ronald B., Associate Clinical Professor  
Davidow, Daniel N., Associate Clinical Professor  
Dawson, Philip A. J., Assistant Clinical Professor  
Deal, Tracey C., Clinical Instructor  
Dewitt, Gerald, Associate Clinical Professor  
Fidler, Robert Y., Assistant Clinical Professor  
Fishburne, Harriette B., Clinical Instructor  
Flanzenbaum, Mark, Assistant Clinical Professor  
Fortner, Julie W., Assistant Clinical Professor  
Gewanter, Harry L., Associate Clinical Professor  
Gibson-Frazier, Gwendolyn, Assistant Clinical Professor  
Gilliam, Kari L., Clinical Instructor  
Grant, Elton, Clinical Instructor  
Grossberg, Judith, Assistant Clinical Professor  
Grossman, Lindsey K., Clinical Professor  
Gunther, Robert C., Clinical Instructor  
Hamilton-Stubbs, Pamela E., Assistant Clinical Professor  
Hanzel, Jeffrey S., Associate Clinical Professor  
Harrison, Mary Ellett, Assistant Clinical Professor  
Haugeto, Sonja A., Clinical Instructor  
Heywood, James, Assistant Clinical Professor  
Jaffe, Michael, Assistant Clinical Professor  
Jaworski, Margie L., Assistant Clinical Professor  
Kahler, Barbara, Assistant Clinical Professor  
Kellett, Gordon N., Associate Clinical Professor  
King, Carla, Clinical Instructor  
Kirchmier, Stanley, Assistant Clinical Professor  
Klaas, J. Richard, Assistant Clinical Professor  
Kraft, Colleen, Associate Clinical Professor  
Kuhn, Janice G., Assistant Clinical Professor  
Kuperminc, Denise C., Assistant Clinical Professor  
Lee, Clifton C., Clinical Instructor  
Libby, Russell C., Assistant Clinical Professor  
Lovings, Vicki, Assistant Clinical Professor  
Mahoney, Rhoda Leigh, Assistant Clinical Professor  
Marshall, Beth C., Clinical Instructor  
Massie, F. Stanford, Clinical Professor  
McConaughy, John, Assistant Clinical Professor  
McCue, Colleen M., Assistant Clinical Professor  
Meyer, Marilyn A., Assistant Clinical Professor  
Mohagheghi, Hassan A., Clinical Instructor  
Mollen, Edward L., Assistant Clinical Professor  
Morris, James J., Clinical Instructor  
Noble, Robert E., Assistant Clinical Professor  
Norris, Wilma, Clinical Instructor  
O'Neil, Timothy, Assistant Clinical Professor  
Pastore, Dominick, Assistant Clinical Professor  
Phillips, Frederic, Clinical Instructor  
Polanshek, Mark, Assistant Clinical Professor  
Powell, Clydetta, Associate Clinical Professor  
Prescott, Georgia, Assistant Clinical Professor

Radcliffe, Jessica J., Assistant Clinical Professor  
 Rahal, Frederick H., Clinical Professor  
 Ransone, Karen A., Assistant Clinical Professor  
 Realubit, Jocelyn, Clinical Instructor  
 Reams, Patricia, Assistant Clinical Professor  
 Reardon, Patrick, Clinical Instructor  
 Robinson III, Grover, Clinical Professor  
 Sanders, Jeanne K., Assistant Clinical Professor  
 Saunders, Martha K., Assistant Clinical Professor  
 Schieken, Richard M., Clinical Professor  
 Schweiker, Mary M., Assistant Clinical Professor  
 Shah, Mahendra, Assistant Clinical Professor  
 Shayne, Robert S., Clinical Instructor  
 Shreve, J. Mark, Clinical Instructor  
 Simes, Rebecca S., Clinical Instructor  
 Smith, Gayle, Assistant Clinical Professor  
 Solomon, Stuart, Associate Clinical Professor  
 Sprinkle, Whitney, Assistant Clinical Professor  
 Sussdorf, Claudia E., Clinical Instructor  
 Swarts, Karen E. A., Clinical Instructor  
 Terrebonne, Mae Ellen, Clinical Instructor  
 Terry, Charles V., Assistant Clinical Professor  
 Tipton, Gary A., Associate Clinical Professor  
 Tyson, Deidre Leigh, Assistant Clinical Professor  
 Wells, James M., Assistant Clinical Professor  
 Werner, John Gregory, Assistant Clinical Professor  
 West, Bruce S., Clinical Instructor  
 Whitaker, Joyce L., Clinical Instructor  
 White, Sara L., Associate Clinical Professor  
 Wiley III, E. James, Assistant Clinical Professor  
 Wiley Jr., E. James, Associate Clinical Professor  
 Wilkerson, Vivian M., Associate Clinical Professor  
 Witt, Mary F., Assistant Clinical Professor  
 Wright III, Melville G., Assistant Clinical Professor  
 Yucha, Kim Peeler, Assistant Clinical Professor  
 Zavelsky, Ilya, Clinical Instructor

\* Joint or secondary appointment

## Division of Adolescent Medicine

### Richard R. Brookman

Professor and Head, Division of Adolescent Medicine (1980)  
 A.B. 1965 Franklin and Marshall College  
 M.D. 1969 Tufts University

## Division of Allergy/Immunology

### Anne-Marie Irani

Professor and Head, Division of Allergy/Immunology (1985)  
 B.S. 1974 and M.D. 1978 American University of Beirut, Lebanon

## Division of Community Pediatrics

### Clinical faculty

Kirkpatrick, Barry V., Clinical Professor

## Division of Critical Care Medicine

### John J. Mickell

Professor and Head, Division of Critical Care Medicine (1978)

B.S. 1968 Manhattan College  
 M.D. 1972 Columbia University

Sreedhar, Sue S. (1993) Associate Professor  
 M.B.B.S. 1982 Madurai University, India

## Division of Gastroenterology

### Martin F. Graham

Professor and Head, Division of Gastroenterology (1980)  
 M.D. 1973 and M.B.Ch.B. 1973 University of Cape Town, South Africa

### Clinical faculty

Kessel, Ann T., Assistant Clinical Professor  
 Williams, Ted, Assistant Clinical Professor

## Division of General Pediatrics and Emergency Care

Cohen, Gail M., Assistant Professor  
 Dolan, Margaret A. (1993) Associate Professor  
 B.S. 1970 College of Mount St. Joseph-on-the-Ohio  
 M.D. 1981 Case Western Reserve University  
 Draper, D. A. (1964) Professor  
 M.D. 1958 Queens University  
 Kancitis, Indra, Assistant Professor  
 Meloy, Linda D. (1990) Associate Professor  
 B.A. 1977 Drew University  
 M.D. 1981 Rutgers University  
 Ragazzi, Helen, Assistant Professor  
 Seagull, Fanya N., Assistant Professor

### Clinical faculty

Connelly, Kevin P., Assistant Clinical Professor  
 Derco, Keith A., Assistant Clinical Professor  
 Dudley, Clarissa, Assistant Clinical Professor

## Division of Genetics/Endocrinology/Metabolism

Kaplowitz, Paul B. (1982) Associate Professor  
 B.S. 1970 University of Michigan  
 Ph.D. 1975 and M.D. 1976 University of Chicago  
 Kumar, Anil, Assistant Professor

## Division of Hematology/Oncology

### Edward C. Russell

Professor and Head, Division of Hematology/Oncology (1978)  
 B.S. 1966 Wake Forest University  
 M.D. 1970 Bowman Gray School of Medicine

Dunn, Nancy L. (1979) Associate Professor  
 B.A. 1969 Western Reserve University  
 M.D. 1973 State University of New York, Buffalo  
 Massey, Gita V. (1987) Associate Professor  
 B.S. 1977 The College of William and Mary  
 M.D. 1981 Virginia Commonwealth University

## Division of Infectious Diseases

### Stuart P. Adler

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 B.A. 1968 and M.D. 1971 Johns Hopkins University

Koch, William C. (1989) Associate Professor  
 B.A. 1977 and M.D. 1981 University of Virginia  
 Manganello, Anne-Marie A. (1987) Research Assistant  
 B.S.N. 1982 Virginia Commonwealth University  
 McVoy, Michael (1984) Associate Professor  
 B.S. 1983 The College of William and Mary  
 Ph.D. 1993 Virginia Commonwealth University

## Division of Neonatal/Perinatal Medicine

### Gary R. Gutscher

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 B.A. 1966 Stanford University  
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Mainali, Elsie, Assistant Professor  
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 B.S. 1977 McGill University  
 M.D. 1981 University of Medicine and Dentistry of New Jersey

## Division of Nephrology

### Clinical faculty

Barcia, John Peter, Assistant Clinical Professor  
 Norwood, Victoria Fay, Associate Clinical Professor

## Division of Pediatric Cardiology

### William B. Moskowitz

Professor and Head, Division of Pediatric Cardiology (1984)  
 B.S. 1975 Florida Technological University  
 M.D. 1978 University of South Florida

Donofrio, Mary T. (1995) Associate Professor  
 Gullquist, Scott D. (1993) Associate Professor  
 B.A. 1982 Vanderbilt University  
 M.S. 1983 and M.D. 1987 Georgetown University  
 Robertson, Louise W. (1965) Associate Professor  
 B.S. 1956 Mary Washington College  
 M.D. 1960 Medical College of Virginia

### Clinical faculty

Allen, Douglas R., Assistant Clinical Professor  
 Schieken, Richard, Clinical Professor  
 Williams, Richard V., Clinical Instructor

## Division of Pediatric Pulmonology

### Greg R. Elliott

Associate Professor and Head, Division of Pediatric Pulmonology (1990)  
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 M.D. 1977 University of Arkansas  
 Epstein, Cynthia E., Assistant Professor

**Clinical faculty**

Pugazhendhi, Vasanthia, Assistant Clinical Professor

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B.S. 1953 Providence College  
M.S. 1956 University of Maryland  
Ph.D. 1959 University of Connecticut  
Allen, Robert C. \*, Professor  
Balster, Robert L. (1973) Professor  
B.S. 1966 University of Minnesota  
Ph.D. 1970 University of Houston  
Beardsley, Patrick M. (1993) Associate Professor  
B.A. 1974 and Ph.D. 1982 University of Minnesota  
Bowman, Edward R. (1981) Research Associate  
Ph.D. 1963 Medical College of Virginia  
Bridgen, David T., Research Assistant  
Churn, Severn B. \*, Associate Professor  
Cook, Charles D., Assistant Professor  
Damaj, M. Imad (1991) Associate Professor  
B.S. 1985 St. Joseph University  
Ph.D. 1991 University of Paris  
Dance, Mario E. (1995) Research Associate  
B.S. 1986 Virginia Polytechnic Institute and State University  
1990 Virginia/Maryland Regional College of Veterinary Medicine  
Delorenzo, Robert John\*, Professor  
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Devane, William, Assistant Professor  
Dewey, William L., Professor  
Ellis Jr., Earl F. (1977) Professor  
B.S. 1968 Oklahoma State University  
Ph.D. 1974 Bowman Gray School of Medicine  
Gewirtz, David A. (1981) Professor  
B.S. 1970 Brooklyn College  
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Grant, Steven\*, Professor  
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Harris, Louis S. (1972) Professor  
B.A. 1954, M.A. 1956 and Ph.D. 1958 Harvard University  
Harris, Shelley A. \*, Assistant Professor  
Hassan, Sajida, Research Associate  
Holt, Shawn E. \*, Assistant Professor  
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B.S. 1979 and Ph.D. 1983 Monash University, Australia  
Jacobs-Helber, Sarah M., Assistant Professor  
Kessler, Fay K. (1976) Research Assistant  
M.S. 1976 Virginia Commonwealth University  
Knisely, Janet S. \*, Associate Professor  
Lamb, Robert G. (1974) Professor  
A.B. 1967 and Ph.D. 1970 University of North Carolina, Chapel Hill

Lichtman, Aron H. (1993) Associate Professor  
B.A. 1984 Rutgers University  
Ph.D. 1989 Dartmouth College  
May, Everette L. (1977) Professor  
B.A. 1935 Bridgewater College  
Ph.D. 1939 University of Virginia  
Miles, Michael F., Associate Professor  
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B.S. 1967 Boston College  
Ph.D. 1974 State University of New York, Buffalo  
Nagarkatti, Mitzi\*, Professor  
Nagarkatti, Prakash S., Professor  
Nestler, John E. \*, Professor and Division Head  
Nicholson, Katherine, Assistant Professor  
Poklis, Alphonse\*, Professor  
Porter, Joseph H. \*, Professor  
Povirk, Lawrence F. (1985) Professor  
B.S. 1972 Carnegie-Mellon University  
Ph.D. 1977 University of California, Berkeley  
Ritter, Joseph K. (1993) Associate Professor  
B.A. 1982 St. Louis University  
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Robinson, Susan E. (1981) Professor  
B.A. 1972 and Ph.D. 1976 Vanderbilt University  
Rosecrans, John A. (1967) Professor  
B.S. 1957 St. John's University  
M.S. 1960 and Ph.D. 1963 University of Rhode Island  
Sanyal, Arun J. \*, Professor and Division Head  
Satin, Leslie S. (1990) Professor  
A.B. 1975 University of California, Santa Barbara  
M.S. 1977 University of Southern California  
Ph.D. 1982 University of California, Los Angeles  
Sawyer, Stephen T. (1995) Professor  
B.S. 1974 and Ph.D. 1980 University of Tennessee  
Schmidt-Ullrich, Rupert\*, Professor  
Selley, Dana E., Assistant Professor  
Shelton, Keith L., Assistant Professor  
Sica, Domenic A. \*, Professor  
Sim-Selley, Laura J., Assistant Professor  
Smith, Forrest L. (1993) Associate Professor  
B.S. 1983 Abilene Christian University  
Ph.D. 1989 Texas Tech University  
Tao, Quing, Research Associate  
Venitz, Jurgen\*, Associate Professor  
Welch, S. P. (1983) Professor  
B.S. 1971 Dakota State College  
M.S. 1973 University of North Dakota  
Ph.D. 1986 Virginia Commonwealth University  
White Jr., Kimber L. (1981) Professor  
B.S. 1972 United States Naval Academy  
Ph.D. 1981 Virginia Commonwealth University  
Wiley, Jenny L. (1994) Associate Professor  
B.S. 1981 College of William & Mary  
M.S. 1988 and Ph.D. 1991 Virginia Commonwealth University  
Zhang, Min, Research Associate

**Emeriti faculty**

Borzelleca, Joseph F., Professor Emeritus  
B.S. 1952 St. Joseph's College  
M.S. 1954 and Ph.D. 1956 Thomas Jefferson University

Egle Jr., John L., Professor Emeritus  
B.S. 1961 Shepherd College  
M.S. 1963 and Ph.D. 1964 West Virginia University  
Woods, Lauren A., Professor Emeritus  
B.S. 1939 Dakota Wesleyan University  
Ph.D. 1943 Iowa State University  
M.D. 1949 University of Michigan

**Affiliate faculty**

Abood, Mary E., Affiliate Associate Professor  
Adams, Irma B., Affiliate Associate Professor  
Carchman, Richard\*, Affiliate Professor  
Compton, David R., Affiliate Associate Professor  
Delaney, Bryan, Affiliate Associate Professor  
Di Marzo, Vincenzo, Affiliate Associate Professor  
Hayes, A. Wallace, Affiliate Professor  
Klykken, Paal C., Affiliate Associate Professor  
Kunos, George, Affiliate Professor  
Loveless, Scott E., Affiliate Associate Professor  
McAfee, Donald, Affiliate Professor  
Moser, Virginia C., Affiliate Associate Professor  
Munson, Judith A., Affiliate Research Professor  
Razdan, Raj K., Affiliate Professor  
Rubin, Ronald P., Affiliate Professor  
Scimeca, Joseph A., Affiliate Associate Professor

\* Joint or secondary appointment

**Department of Physical Medicine and Rehabilitation**

**David X. Cifu**

Professor and Department Chair (1991)  
B.A. 1986 and M.D. 1986 Boston University

Bullock, M. Ross\*, Professor  
Dery, Adrienne Roberta (1988) Assistant Professor  
B.S. 1974 Auburn University  
M.B.A. 1986 James Madison University  
Drake, David F., Assistant Professor  
Elliot, Timothy R. \*, Assistant Professor  
Ericksen, Jeffery J., Assistant Professor  
Gudas, Stephen A. \* (1978) Associate Professor  
B.S. 1971 University of Pennsylvania  
M.S. 1976 and Ph.D. 1988 Virginia Commonwealth University  
Hess, David W., Assistant Professor  
Humphrey, Reed\*, Assistant Professor  
Jayawardena, Vidya, Assistant Professor  
Jena, Tripti, Assistant Professor  
Jesudian, Alice N. \*, Assistant Professor  
Kennedy, Richard E. \*, Assistant Professor  
Kreutzer, Jeffrey S. (1983) Professor  
B.A. 1975 State University of New York, Binghamton  
M.A. 1978 Appalachian State University  
Ph.D. 1982 Bowling Green State University  
Leshner, Robert T. \*, Professor  
Lester, Denise D. \*, Assistant Professor  
Li, Li, Assistant Professor  
Loughran, Thomas P. \*, Associate Professor  
Marwitz, Jennifer H. (1988) Assistant Professor  
B.S. 1986 University of Wisconsin  
M.A. 1989 University of Richmond

McKinley, William O. (1989) Associate Professor  
B.S. 1979 Davidson College  
M.D. 1985 Albany Medical College  
McMahon, Brian T. \*, Professor  
Meade, Michelle A., Assistant Professor  
Midha, Meena, Associate Professor  
Monasterio, Eugenio, Assistant Professor  
Neimeier, Janet P., Assistant Professor  
Pavot, Pierre \*, Assistant Professor  
Pidcoe, Peter E. \*, Assistant Professor  
Potteiger, Jeffrey A. \*, Associate Professor  
Silver, Timothy M., Assistant Professor  
Tewksbury, Michael, Assistant Professor  
Walker, William C. (1991) Associate Professor  
B.S. 1983 University of Virginia  
M.D. 1987 Virginia Commonwealth University  
Zuelzer, Wilhelm A. \*, Associate Professor

#### Emeriti

Flax, Herman J., Clinical Professor Emeritus  
Park III, Herbert, Clinical Professor Emeritus

#### Clinical faculty

Beninghove, Dawn L., Assistant Clinical Professor  
Bruma, Larisa, Clinical Instructor  
Calabrese, Vincent \*, Clinical Professor  
Jones Jr., Albert M., Assistant Clinical Professor  
Leghart, Gregory, Associate Clinical Professor  
McCombe, Karen R., Assistant Clinical Professor  
McGowan, J. Patrick, Assistant Clinical Professor.  
McKinley, Linda L., Assistant Clinical Professor  
McNery, Margaret Robin, Assistant Clinical Professor  
Parente, Rick, Assistant Clinical Professor  
Seel, Ronald T., Assistant Clinical Professor  
Sizemore, Richard Macon, Assistant Clinical Professor  
Steidle, Karen, Assistant Clinical Professor  
Truong, Anne Nquyen, Assistant Clinical Professor  
Wilcox, Patricia S., Assistant Clinical Professor  
Woodard, Elizabeth, Assistant Clinical Professor  
Wootton, Jane P., Associate Clinical Professor  
Zitnay, George A., Assistant Clinical Professor

\* Joint or secondary appointment

### Division of Rehabilitation Research

#### Paul H. Wehman

Professor and Head, Division of Rehabilitation Research (1976)  
B.A. 1970 Western Illinois University  
M.S. 1972 Illinois State University  
Ph.D. 1976 University of Wisconsin, Madison

### Department of Physiology

#### Margaret C. Biber

Professor and Department Chair (1975)  
B.S. 1964 University of London  
D.Phil. 1967 Oxford University

Abd-Elfattah, Anwar S. \*, Professor  
Arena, Ross A. \*, Assistant Professor  
Barbee, Robert Wayne \*, Assistant Professor

Baumgarten, Clive M. (1979) Professor  
B.A. 1970 and Ph.D. 1976 Northwestern University  
Biber, Thomas U. \* (1975) Professor  
M.D. 1954 University of Zurich  
Ph.D. 1956 University of Berne  
Bowlins, Gary L. \*, Assistant Professor  
Broadus, William C. \*, Associate Professor  
Bullock, M. Ross \*, Professor  
Churn, Severn B. \*, Associate Professor  
Clemo, Simon Henry \*, Associate Professor  
Cohen, Neri M. \*, Assistant Professor  
Costanzo, Linda S. (1981) Professor  
B.A. 1969 Duke University  
Ph.D. 1973 State University of New York, Upstate  
Costanzo, Richard M. (1979) Professor  
B.S. 1969 and Ph.D. 1975 State University of New York  
Dent, Paul \*, Associate Professor  
DeSimone, John A. (1974) Professor  
B.A. 1964 State University of New York  
Ph.D. 1971 Harvard University  
Eckberg, Dwain L. \*, Professor  
Fabiato, Alexandre (1975) Professor  
M.D. 1969 and Ph.D. 1970 University of Paris  
Feher, Joseph J. (1977) Professor  
B.S. 1971, M.S. 1973 and Ph.D. 1978 Cornell University  
Feldman, George \*, Professor  
Ferro, Thomas J. \*, Professor  
Fillmore, Helen \*, Assistant Professor  
Ford, George D., Professor  
Goldberg, Stephen J. \*, Professor  
Graham, Martin F. \*, Professor  
Grider, John R. (1981) Professor  
B.A. 1973 University of Pennsylvania  
Ph.D. 1981 Hahnemann University  
Heck, Gerard L. (1980) Assistant Professor  
Ph.D. 1974 Duke University  
Hess, Michael L. \*, Professor  
Ivatury, Rao R. \*, Professor  
Jiang, Min, Assistant Professor  
Kalimi, Mohammed Y. (1979) Professor  
B.S. 1961, M.S. 1964 and Ph.D. 1970 Bombay University  
Karnam, Srinivasa M. (1992) Associate Professor  
B.S. 1977, M.S. 1979 and Ph.D. 1983 SV University  
Kauma, Scott W. \*, Professor  
Kuemmerle, John F. \*, Associate Professor  
Kukreja, Rakesh C. \*, Professor  
Lyal, Vijay (1994) Assistant Professor  
B.S. 1970 Punjab University, India  
M.S. 1975 and Ph.D. 1981 Postgraduate Institute of Medical Education Research, India  
Marmarou, Anthony \*, Professor  
Miller, Gerald E. \*, Professor  
Pittman, Roland N. (1974) Professor  
B.S. 1966 and M.A. 1968 Massachusetts Institute of Technology  
Ph.D. 1971 State University of New York  
Price, Steven (1966) Professor  
A.B. 1958 Adelphi University  
M.A. 1960 and Ph.D. 1961 Princeton University  
Ramo, Ary S. \*, Professor  
Satin, Leslie S. \*, Professor

Schoolwerth, Anton C. \*, Professor  
Schubert, Mitchell L. \*, Professor  
Shapiro, Steven \*, Associate Professor  
Simpson, David G. \*, Assistant Professor  
Tseng, Gea-Ny (1999) Associate Professor  
Walsh, Scott W. \*, Professor  
Ward, Kevin R. \*, Assistant Professor  
Ware, Joy Laurin \*, Professor  
Wilson, John D. \*, Associate Professor  
Witorsch, Raphael J., Professor

#### Emeriti faculty

Briggs, F. Norman, Professor Emeritus  
A.B. 1947, M.A. 1948 and Ph.D. 1953 University of California  
Cleary, S. F. (1964) Professor Emeritus  
B.S. 1958 New York University  
M.S. 1960 University of Rochester  
Ph.D. 1964 New York University  
Corley, Karl C., Associate Professor Emeritus  
B.S. 1958 Trinity College  
Ph.D. 1964 University of Rochester  
Edwards, Leslie E., Professor Emeritus  
B.S. 1937 and M.S. 1939 Washington State University  
Ph.D. 1944 University of Rochester  
Ham Jr., William T., Professor Emeritus  
Huf, Ernst G., Professor Emeritus  
Ph.D. 1931 and M.D. 1937 University of Frankfurt, Germany  
Mikulecky, Donald C., Professor Emeritus  
Poland, James Leroy, Associate Professor Emeritus  
Ridgway, Ellis B., Professor Emeritus  
B.S. 1963 Massachusetts Institute of Technology  
Ph.D. 1968 University of Oregon

#### Affiliate faculty

Bhatnagar, Ajay S., Affiliate Associate Professor  
Chu, Shijian, Affiliate Assistant Professor  
Hill, David L., Affiliate Associate Professor  
Jakoi, Emma, Affiliate Associate Professor  
Kobal, Gerd, External Affiliate Professor

\* Joint or secondary appointment

### Department of Preventive Medicine and Community Health

#### Tilahun Adera

Professor and Department Chair  
Ph.D. 1987 Oregon State University

Adler, Robert A. \*, Professor  
Barker, Thomas \*, Professor  
Borzelleca Jr., Joseph F., Assistant Professor  
Cooper, Kevin R. \*, Professor  
Danish, Steve \*, Professor  
Edmond, Michael B. \*, Associate Professor  
Ginder, Gordon Dean \*, Professor  
Gurnick, Delores A. \*, Assistant Professor  
Harris, Shelley A., Assistant Professor  
Hunt, Ronald J. \* (1998) Professor  
D.D.S. 1973 and M.S. 1982 University of Iowa  
Kreutzer, Kathleen O'Kane \*, Assistant Professor

Kuzel, Anton John\*, Professor  
 Lanier, Jack O., Professor  
 Luke, Roice D.\*, Professor  
 Masho, Saba W., Assistant Professor  
 Mazmanian, Paul E. (1978) Professor  
     B.S. 1972 Wayne State University  
     M.A. 1975 Michigan State University  
     Ph.D. 1979 University of Michigan  
 McGurl, John David, Assistant Professor  
 Nettleman, Mary D.\*, Professor  
 Rossiter, Louis F.\*, Associate Professor  
 Rothemich, Stephen F.\*, Associate Professor  
 Sanders, Karen M.\*, Professor  
 Vance, R. Leonard (1986) Associate Professor  
     B.S. 1962 Virginia Polytechnic Institute and State University  
     Ph.D. 1969 University of Virginia  
     J.D. 1975 University of Richmond  
 Wan, Thomas T. H.\*, Professor  
 Wenzel, Richard P.\*, Professor  
 Wilson, Diane B., Associate Professor  
 Woolf, Steven\*, Professor

#### **Emeriti faculty**

Ayres, Stephen M.\*, Professor Emeritus  
 Buzzard, I. Marilyn, Associate Professor Emerita  
 Jesse, Robert W., Professor Emeritus  
     M.D. 1946 University of Tennessee  
     M.P.H. 1952 Johns Hopkins University  
 Peeples, Edward, Associate Professor Emeritus  
     B.S. 1957 Richmond Professional Institute  
     M.A. 1963 University of Pennsylvania  
     Ph.D. 1972 University of Kentucky  
 Spencer, Frederick J., Clinical Professor Emeritus  
     M.B. 1945 and B.S. 1945 University of Durham, United Kingdom  
     M.P.H. 1958 Harvard University

#### **Clinical faculty**

Amponsah, Akwasi A., Assistant Clinical Professor  
 Anum, Emmanuel A., Assistant Clinical Professor  
 Armstrong, Carl W.\*, Associate Clinical Professor  
 Baffi, Charles R., Associate Clinical Professor  
 Battista, Joseph V.\*, Clinical Instructor  
 Bradford, Judith B., Assistant Clinical Professor  
 Cole, Homer, Assistant Clinical Professor  
 Compton, David A., Associate Clinical Professor  
 Franck, Thomas G., Assistant Clinical Professor  
 Geddes, Norma, Assistant Clinical Professor  
 Gordon, Randolph, Clinical Professor  
 Hanna, Constance, Associate Clinical Professor  
 Itskovich, Gregory A., Associate Clinical Professor  
 Jannuzzi, Daniel M., Associate Clinical Professor  
 Jones, Jacob E.\*, Associate Clinical Professor  
 Keene, John H., Associate Clinical Professor  
 Marr, John S., Clinical Professor  
 McGehee Jr., Read F., Associate Clinical Professor  
 Miller Jr., Grayson, Associate Clinical Professor  
 Murrelle, Edward L., Assistant Clinical Professor  
 Nelson, William R., Associate Clinical Professor  
 Peoples, Napoleon L.\*, Associate Clinical Professor  
 Redican, Kerry J., Associate Clinical Professor  
 Ross, James W., Associate Clinical Professor  
 Seifen, Gerges A., Associate Clinical Professor  
 Speizer, Ilene S., Associate Clinical Professor

Stern, Donald, Associate Clinical Professor  
 Stockwell, Heather G., Associate Clinical Professor  
 Stroube, Robert B., Associate Clinical Professor  
 Thorpe, Curtis W., Associate Clinical Professor  
 Turf, Elizabeth Page, Associate Clinical Professor  
 Tweel, Theodore T.\*, Assistant Clinical Professor  
 Wesdock, James C., Associate Clinical Professor

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### **Department of Psychiatry**

#### **Joel J. Silverman**

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 B.A. 1965 Washington University  
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Adkins, Julian, Instructor  
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 Best III, Al M.\*, Associate Professor  
 Blatecky, John J. (1991) Assistant Professor  
     B.B.A. 1970 University of Wisconsin  
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 Blum, Joel A., Associate Professor  
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     M.A. 1985 and Ph.D. 1988 University of California, Berkeley  
 Chen, Xiangning, Assistant Professor  
 Collins, Phil, Assistant Professor  
 Conners, Wayne R., Instructor  
 Eaves, Lindon J.\*, Professor  
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 Fernandez, Antony, Assistant Professor  
 Feuer, Stanley J., Instructor  
 Gardner Jr., Charles (1995) Research Associate  
     M.S. 1995 University of Nebraska  
     Ph.D. 1976 University of Florida  
 Gerber, Paul\*, Professor  
 Gramling, Sandra\*, Associate Professor  
 Harkins, Stephen\*, Professor  
 Hess, David W.\*, Assistant Professor  
 Hettema, John M., Assistant Professor  
 Holmes, Clarissa S.\*, Professor  
 Horvath, Paula K.\*, Associate Professor  
 Jacobson, Kristen C., Assistant Professor  
 Joseph, Mary, Associate Professor  
 Julius, Demetrios A., Clinical Professor  
 Kirby, Donald F.\*, Professor  
 Klink, Charles\*, Assistant Professor  
 Knisely, Janet S. (1984) Associate Professor  
     B.S. 1981, M.S. 1983 and Ph.D. 1985 Virginia Commonwealth University  
 Kreutzer, Jeffrey S.\*, Professor  
 Kuhn, Jonathan, Research Associate  
 Lewis, Robert E. (1990) Associate Professor  
     B.S. 1969 St. Benedict's College  
     M.A. 1971 and Ed.D. 1972 Appalachian State University

Ed.D. 1975 Virginia Polytechnic Institute and State University  
 May, Teresa M.\*, Assistant Professor  
 McCullough, James\*, Associate Professor  
 Myers, John M., Research Assistant  
 Neale, Michael C. (1986) Professor  
     B.S. 1980 and Ph.D. 1985 University of London  
 Nelson, Kirk L., Assistant Professor  
 Niemeier, Janet P.\*, Assistant Professor  
 Opalesky-Smith, Jill, Assistant Professor  
 Pickens, Roy (1999) Professor  
     B.A. 1961 and M.S. 1962 Auburn University  
     Ph.D. 1965 University of Mississippi  
 Prescott, Carol A. (1991) Associate Professor  
     B.A. 1984 and M.A. 1984 Johns Hopkins University  
     Ph.D. 1991 University of Virginia  
 Riley, Brien P., Assistant Professor  
 Salam, Sultana A., Assistant Professor  
 Silberg, Judy L.\*, Assistant Professor  
 Sullivan, Patrick (1996) Professor  
     B.S. 1981 Notre Dame  
     M.D. 1988 University of California, San Francisco  
 Theogaraj, Janakiraj, Associate Professor  
 Trutia, Alexandru E., Assistant Professor  
 Tully, Christine L.\*, Assistant Professor  
 Van Den Oord, Edwin J.C.G., Associate Professor  
 Vieweg, Victor (1991) Professor  
     B.S. 1957 United States Naval Academy  
     M.D. 1965 George Washington University  
 Vrana, Scott Richard\*, Associate Professor  
 Weaver, Michael F.\*, Assistant Professor  
 Winfrey, C. Jack, Associate Professor

#### **Emeriti faculty**

Lindemann, Lillian, Professor Emerita  
 MacLean, Charles J. (1989) Professor Emeritus  
 Schumann, Morton D., Associate Professor Emeritus

#### **Clinical faculty**

Alessi, Robert, Assistant Clinical Professor  
 Anderson, Jonathan, Assistant Clinical Professor  
 Ashby, Stephen J., Associate Clinical Professor  
 Atri, Padmini, Assistant Clinical Professor  
 Berg, Phyllis A., Assistant Clinical Professor  
 Berman, Lisa Myra, Assistant Clinical Professor  
 Bick, Michael S., Assistant Clinical Professor  
 Blackmer, Dana Robert, Assistant Clinical Professor  
 Bloomfield, Douglass, Assistant Clinical Professor  
 Boettcher, Dina S., Assistant Clinical Professor  
 Boyce-Draeger, Jason, Clinical Instructor  
 Braunstein, George, Clinical Instructor  
 Brooks, Kenneth P., Clinical Instructor  
 Brown Jr., D. Earl, Clinical Professor  
 Brunk, Molly, Associate Clinical Professor  
 Bullock, James, Assistant Clinical Professor  
 Burke, William T., Clinical Instructor  
 Buxton, Martin N., Clinical Professor  
 Carter, Wesley B., Assistant Clinical Professor  
 Caruso, Norma J., Assistant Clinical Professor  
 Chapman, Charlotte M., Clinical Instructor  
 Coffey, Anne, Assistant Clinical Professor  
 Cole, Debra E., Assistant Clinical Professor  
 Cropsy, Karen L., Assistant Clinical Professor  
 Curtis Jr., Richard E., Clinical Instructor



Dahlvani, Salim A., Assistant Clinical Professor  
 Daniels-Mohring, Debbie, Clinical Instructor  
 Davidson, Martha, Assistant Clinical Professor  
 Davis, Charles M., Assistant Clinical Professor  
 Deaton, Ann V., Assistant Clinical Professor  
 Duchin, Louis K., Assistant Clinical Professor  
 Duvall, Margaret L., Assistant Clinical Professor  
 Dwyer, John P., Clinical Instructor  
 Entin, Alan D., Associate Clinical Professor  
 Ettigi, Prakash G., Associate Clinical Professor  
 Evans, James, Associate Clinical Professor  
 Everett, Anita, Assistant Clinical Professor  
 Falcon, Hugo, Assistant Clinical Professor  
 Falk, Robert, Assistant Clinical Professor  
 Fanous, Ayman, Assistant Clinical Professor  
 Feix, Jeffrey, Assistant Clinical Professor  
 Ferriss, William T., Assistant Clinical Professor  
 Fisher, Gwendoline, Associate Clinical Professor  
 Fleischer, Sydney, Assistant Clinical Professor  
 Forbes, Ronald, Assistant Clinical Professor  
 Forssmann-Falck, Renate, Clinical Professor  
 Foster, Helen, Associate Clinical Professor  
 Foster Jr., Merritt W., Clinical Professor  
 Friedel, Robert O., Distinguished Clinical Professor  
 Gaertner, W. Ronald, Assistant Clinical Professor  
 Garland, Olivia J., Assistant Clinical Professor  
 Garten, Joseph A., Clinical Instructor  
 Gomez, Humberto, Associate Clinical Professor  
 Goodship, Joan Marie, Assistant Clinical Professor  
 Hadeed, Grace, Assistant Clinical Professor  
 Harp, William L., Associate Clinical Professor  
 Harrelson, Peggy, Clinical Instructor  
 Heck, Andrew L., Assistant Clinical Professor  
 Herrick, Stephen, Assistant Clinical Professor  
 Hoffman, Johanna A., Associate Clinical Professor  
 Holland, Henry D., Clinical Professor  
 Hopkins, Kathleen, Assistant Clinical Professor  
 Hudson, Joyce A., Assistant Clinical Professor  
 Hulburt, David S., Associate Clinical Professor  
 Jahan, Israt, Assistant Clinical Professor  
 Jennings, W. Stanley, Assistant Clinical Professor  
 Johnson, Sharlene P., Clinical Instructor  
 Jones, J. Kipling, Assistant Clinical Professor  
 Karthaus, Patricia, Assistant Clinical Professor  
 Kaul, Adam, Assistant Clinical Professor  
 Keefer, Karen, Assistant Clinical Professor  
 Khan, Amir, Assistant Clinical Professor  
 Kimball, James, Assistant Clinical Professor  
 Klinger, Rochelle, Associate Clinical Professor  
 Kowler, Daniel E., Associate Clinical Professor  
 Kryzanowski, Leslie, Assistant Clinical Professor  
 Kurgans, Martha, Assistant Clinical Professor  
 Lagow, Anne D., Assistant Clinical Professor  
 Latham, Larry, Associate Clinical Professor  
 Lindstrom, John, Assistant Clinical Professor  
 Lowe, Elizabeth, Assistant Clinical Professor  
 Lynch, John, Assistant Clinical Professor  
 Maghakian, Cynthia Jayne, Assistant Clinical Professor  
 Markowitz, David, Associate Clinical Professor  
 Martelli, Michael, Assistant Clinical Professor  
 Master, Sherman, Clinical Professor  
 May, Richard, Assistant Clinical Professor  
 May, Theresa M., Clinical Instructor  
 McLaughlin, Julia G., Clinical Professor

Miller, Elaine S., Assistant Clinical Professor  
 Morris Jr., Henry E., Assistant Clinical Professor  
 Morris, James J. \*, Clinical Instructor  
 Murdoch-Kitt, Norma, Assistant Clinical Professor  
 Nelson, Bobby W., Associate Clinical Professor  
 Nelson, Evan Stewart, Assistant Clinical Professor  
 Nelson, Michele K., Assistant Clinical Professor  
 O'Connor, Michael D., Clinical Instructor  
 Olinger, Mary S., Assistant Clinical Professor  
 Pade, Patricia A., Assistant Clinical Professor  
 Peck, Edward A., Assistant Clinical Professor  
 Peed, Steven F., Associate Clinical Professor  
 Pelonero, Anthony, Associate Clinical Professor  
 Petry, Robert, Associate Clinical Professor  
 Pierce, Willard, Assistant Clinical Professor  
 Pizzani, Miriam Koller, Associate Clinical Professor  
 Plotkin, Joan, Assistant Clinical Professor  
 Reilly, Paul, Assistant Clinical Professor  
 Reinhard, James S., Assistant Clinical Professor  
 Russell Jr., John, Clinical Professor  
 Sale, Mary Jane, Clinical Instructor  
 Schlobohm, Philip G., Assistant Clinical Professor  
 Schnoll, Sidney H. \*, Clinical Professor  
 Sellman, James E., Clinical Instructor  
 Shah, Amit, Assistant Clinical Professor  
 Sheneman, Daniel P., Associate Clinical Professor  
 Shenoy, Ramakrishnan, Clinical Professor  
 Sheorn, Keyhill, Assistant Clinical Professor  
 Shepard, William A., Assistant Clinical Professor  
 Shield Jr., James A., Clinical Professor  
 Sieg, Karl G., Assistant Clinical Professor  
 Silberman, Henry K., Clinical Professor  
 Simonini, Charles, Assistant Clinical Professor  
 Singh, Neena G., Assistant Clinical Professor  
 Sitarz, Anne, Assistant Clinical Professor  
 Smith, Majorie, Assistant Clinical Professor  
 Solanky, Asha, Assistant Clinical Professor  
 Spanier, Elliott J., Assistant Clinical Professor  
 Spector, Anne T., Assistant Clinical Professor  
 Spector, Paul M., Assistant Clinical Professor  
 Speer, Sandra K., Assistant Clinical Professor  
 Stewart III, James W., Clinical Instructor  
 Stone, Jacqueline S., Assistant Clinical Professor  
 Suthers-McCabe, Marie, Associate Clinical Professor  
 Terraciano, Cynthia, Assistant Clinical Professor  
 Terraciano, Thomas, Assistant Clinical Professor  
 Theodoridis, Dimitrios, Assistant Clinical Professor  
 Thurmond, Ellen, Assistant Clinical Professor  
 Tidler, Lillian M., Assistant Clinical Professor  
 Torres-Lisboa, Patricio, Clinical Instructor  
 Watkins, Yvonne, Assistant Clinical Professor  
 Watts, Charlotte, Assistant Clinical Professor  
 Williams, Robert K., Clinical Professor  
 Winter, Joan E., Assistant Clinical Professor  
 Wolber, Greg J., Associate Clinical Professor  
 Wolf, Steven C., Assistant Clinical Professor  
 Wouters, L. Marianne, Assistant Clinical Professor  
 Wunsch, Martha J., Assistant Clinical Professor  
 Yagel, Craig, Assistant Clinical Professor  
 Zaller, Eli J., Associate Clinical Professor  
 Zhang, Jian-Min, Assistant Clinical Professor  
 Ziegler, Penelope, Associate Clinical Professor

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## Division of Addiction Medicine

### Elinore F. McCance-Katz

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Cropsey, Karen L., Assistant Professor  
 Haller, Deborah L., Associate Professor

## Division of Ambulatory Care

### Susan G. Kornstein

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B.S., Sc.B. 1980 and M.D. 1983 Brown University

Adcock, Charles R., Assistant Professor  
 Burke, Barbara R. P., Assistant Professor  
 Camp, Norman M. (1988) Clinical Professor  
 A.A. 1962 University of Florida  
 M.D. 1966 University of Tennessee  
 Christian, Frances M. (1976) Associate Professor  
 B.A. 1972 Howard University  
 MSW 1974 University of Michigan  
 Ph.D. 1994 Virginia Commonwealth University  
 Giorgi-Guarnieri, Deborah, Assistant Professor  
 Kendler, Kenneth S. (1983) Professor  
 B.A. 1972 University of California  
 M.D. 1976 Stanford University  
 Kudlas, Jane, Assistant Professor  
 McDaniel, Kent, Assistant Professor  
 McKenzie, Norma D. (1987) Associate Professor  
 B.A. 1965 Stanford University  
 M.S. 1967 University of Oregon  
 M.D. 1971 University of California  
 Mishra, Asha S. (1985) Professor  
 B.S. 1976 and M.D. 1976 Lady Hardinge Medical College, India  
 Shires, Betsy W., Assistant Professor  
 Sholar, Elbert (1991) Associate Professor  
 A.B. 1982 Washington University  
 M.D. 1987 St. Louis University  
 Sriram, Radhika, Assistant Professor  
 Thomas, J. Randall (1988) Associate Professor  
 B.S. 1975 Bowling Green State University  
 M.A. 1977 and Ph.D. 1982 University of Florida  
 Urbach, John R. (1984) Associate Professor  
 A.B. 1973 Cornell University  
 M.D. 1977 University of Michigan

### Clinical faculty

Albright, David, Associate Clinical Professor  
 Braen, Eric, Assistant Clinical Professor  
 Farnham, Carole, Assistant Clinical Professor  
 Tuason, Amenra, Assistant Clinical Professor

## Division of Child and Adolescent Psychiatry

### Aradhana Sood

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 M.S. 1966 and Ph.D. 1967 Syracuse University  
 Davis, Veronica D., Assistant Professor  
 Doyle, Nancy L. (1991) Assistant Professor  
 B.S. 1975 Virginia Commonwealth University  
 M.S. 1981 Chapman College  
 Estrera, Nenita, Assistant Professor  
 Fahey, William E. (1996) Assistant Professor  
 Ph.D. 1992 Indiana State  
 Hill, Brian T., Assistant Professor  
 Hill, Janet, Assistant Professor  
 Linker, Julie A., Assistant Professor  
 Marshall, Lisa A., Assistant Professor  
 Meyer, Brian L., Assistant Professor  
 Moritz, Jennine (1994) Assistant Professor  
 B.S. 1988 University of S. Sewanee  
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 O'Keefe, Dorothy A., Assistant Professor  
 Oswald, Donald, Associate Professor  
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 B.A. 1973 Cornell University  
 M.D. 1977 University of Michigan  
 Wood, Isaac (1989) Associate Professor  
 B.S. 1978 Lynchburg College  
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 Smith, Angela, Assistant Clinical Professor  
 Waters, Karen, Assistant Clinical Professor

### **Division of Clinical Psychology**

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 B.A. 1975, M.A. 1977 and Ph.D. 1980 North Illinois University

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 B.A. 1972 State University of New York, Buffalo  
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 Ingersoll, Karen S. (1992) Assistant Professor  
 Ph.D. 1992 University of Virginia  
 Olbrisch, Mary E. (1985) Associate Professor  
 B.A. 1973 DePaul University  
 M.S. 1975 and Ph.D. 1978 Florida State University  
 Wade, James B. (1984) Associate Professor  
 B.A. 1979 State University of New York  
 Ph.D. 1984 University of Chicago

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Benedict, Sharon, Assistant Clinical Professor  
 Ehrmantraut, John E., Assistant Clinical Professor  
 Morris, James, Assistant Clinical Professor  
 Reif, Thomas F., Clinical Instructor

### **Division of Consultation/Liaison Psychiatry**

#### **James L. Levenson**

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 B.A. 1973 University of Chicago  
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 Kennedy, Richard E., Assistant Professor  
 Schneider, Robert K., Assistant Professor

### **Division of Inpatient Psychiatry**

#### **Ananda K. Pandurangi**

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 M.B.B.S. 1975 University of Madras  
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Barker, Sandra (1990) Professor  
 B.A. 1972 University of Florida  
 M.S. 1976 and Ph.D. 1978 Florida State University  
 Jahan, Israt, Assistant Professor  
 Lakhani, Sultan Ali, Assistant Professor  
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 M.B.B.S. 1977 Maulana Azad Medical College, India  
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### **Department of Radiation Oncology**

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 M.D. 1970 University of Heidelberg, Germany

Abayomi, Olubunmi K., Associate Professor  
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 M.D. 1989 Wake Forest University  
 Bartee, Christopher L., Research Associate  
 Benedict Jr., Stanley H. (1993) Associate Professor  
 B.A. 1980 University of California, San Diego  
 M.S. 1984 San Diego State University  
 Ph.D. 1992 University of California, Los Angeles  
 Berta, Christine, Instructor  
 Broadus, William C.\*, Associate Professor  
 Chabani, Omar, Instructor  
 Chung, Theodore D., Associate Professor  
 Dent, Paul (1996) Associate Professor  
 B.S. 1988 University of New Castle  
 Ph.D. 1991 University of Dundee  
 Hagan, Michael P., Associate Professor  
 Johnson, Christopher R. (1986) Associate Professor  
 B.A. 1976 University of Virginia  
 M.D. 1981 Virginia Commonwealth University  
 Keall, Paul John, Assistant Professor  
 Kim, Jong O., Instructor  
 Kini, Vijaykumar R., Assistant Professor

Lin, Peck-Sun (1988) Professor  
 B.S. 1960 and M.S. 1963 National Taiwan University  
 Ph.D. 1966 South Dakota State University  
 Mikkelsen, Ross (1988) Professor  
 B.A. 1968 and Ph.D. 1973 University of California, Santa Barbara  
 Morris, Monica R., Assistant Professor  
 Mustain, W. Anthony (1988) Assistant Professor  
 B.A. 1976 The College of William and Mary  
 M.B.A. 1984 Virginia Commonwealth University  
 Sakthi, Nirmal N., Instructor  
 Siebers, Jeffrey V., Assistant Professor  
 Song, Danny Y., Assistant Professor  
 Todor, Aurel Dorin, Assistant Professor  
 Tong, Shidong, Assistant Professor  
 Valerie, C. Kristoffer (1989) Professor  
 M.S. 1980 Royal Institute of Technology, Sweden  
 M.S. 1985 Temple University  
 Ph.D. 1986 Royal Institute of Technology, Sweden  
 Williamson, Jeffrey F., Professor  
 Wu, Qiuwen (1996) Assistant Professor  
 B.S. 1988 University of Science and Technology  
 M.A. 1990 and Ph.D. 1994 Columbia University  
 Wu, Yan, Instructor

#### **Clinical faculty**

Cardinale, Robert M., Associate Clinical Professor  
 Heath, Robert, Assistant Clinical Professor  
 Kinard, James Donald, Assistant Clinical Professor  
 Lundeen, William Bruce, Associate Clinical Professor  
 Manning, Matthew A., Assistant Clinical Professor  
 Sinesi, Christopher C., Assistant Clinical Professor  
 Tercilla, Oscar F., Associate Clinical Professor  
 Torre, Taryn G., Assistant Clinical Professor  
 Walden, Thomas, Assistant Clinical Professor

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### **Department of Radiology**

#### **Ann S. Fulcher**

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 M.D. 1987 Virginia Commonwealth University

Broga, Dean\* (1975) Associate Professor  
 B.S. 1974 Lowell Technological Institute  
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 Ph.D. 1983 University of Virginia  
 Elliott, Sherry C. (1986) Associate Professor  
 B.S. 1982 and M.B.A. 1985 Virginia Commonwealth University  
 Hahn, Jee Ho, Assistant Professor  
 Khan, Muhammad, R. R., Instructor  
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 Lowry, Patricia A., Associate Professor  
 Marmarou, Anthony\* (1982) Professor  
 B.S. 1959 Drexel University  
 M.S. 1966 University of Pennsylvania  
 Ph.D. 1973 Drexel University  
 Pandurangi, Ananda K.\*, Professor  
 Rastgar, Sohi\*,  
 Ro, Duk-woo, Associate Professor

Tatum, James L., Professor  
B.S. 1969 The College of William and Mary  
M.D. 1973 Virginia Commonwealth University

#### **Emeritus faculty**

Neal, M. Pinson, Professor Emeritus  
B.S. 1949 University of Missouri  
M.D. 1953 University of Tennessee

#### **Clinical faculty**

Balkissoon, Avinash, Assistant Clinical Professor  
Buetow, Peter C., Assistant Clinical Professor  
Cole, Timothy J., Assistant Clinical Professor  
Disler, David G., Associate Clinical Professor  
Dufour, Jean Maurice, Assistant Clinical Professor  
Faunce III, Howard, Assistant Clinical Professor  
Finnegan, Maurice, Assistant Clinical Professor  
Girevendulis, Alexander, Assistant Clinical Professor  
Goldschmidt, Robert A., Assistant Clinical Professor  
Grizzard, John D., Assistant Clinical Professor  
Howell, Talmadge R., Clinical Professor  
Jensen, Mary E., Assistant Clinical Professor  
Kallmes, David F., Assistant Clinical Professor  
Konerding, Karsten, Assistant Clinical Professor  
Kuta, A. John, Assistant Clinical Professor  
Lucas, Rodney D., Clinical Instructor  
Phillips, Clifford D., Clinical Instructor  
Prasad, Uma R., Assistant Clinical Professor  
Tutton, Roger H., Associate Clinical Professor  
Vinik, Melvin, Associate Clinical Professor  
Wilkinson, Diane L., Assistant Clinical Professor

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### **Division of Diagnostic Radiology**

#### **Daniel A. Henry**

Associate Professor and Head, Division of  
Diagnostic Radiology (1977)  
B.S. 1966 St. Louis University  
M.D. 1971 St. Louis University

Auletta, Ann G., Assistant Professor  
Bosch, Herman A. (1973) Assistant Professor  
A.B. 1963 Drew University  
M.D. 1967 Tufts University  
Brewer, William H. (1978) Associate Professor  
B.A. 1964 and M.D. 1968 Vanderbilt University  
Carucci, Laura R., Assistant Professor  
Floyd, H. L. (1966) Associate Professor  
M.D. 1960 George Washington University  
Halvorsen Jr., Robert A., Professor  
Hom, Mark, Assistant Professor  
Kaushik, Shaifali, Assistant Professor  
Langer, Thomas G., Associate Professor  
Liu, Amon Y., Assistant Professor  
Liu, Chung I., Assistant Professor  
Maroney, Timothy P., Assistant Professor  
Messmer, James M. (1981) Professor  
B.S. 1968 Rockhurst College  
M.D. 1972 St. Louis University  
M.A. 1995 Virginia Commonwealth University  
Narla, Lakshmana D. (1988) Associate Professor  
M.B.B.S. 1976 Guntur Medical College, India

Parker, Mark S., Associate Professor  
Picca, David A., Instructor  
Proto, Anthony V., Professor  
Quagliano, Peter V., Assistant Professor  
Salour, Mozhddeh, Assistant Professor  
Shah, Siddhi, Assistant Professor  
Shaw, Chung-I, Assistant Professor  
Shaw De Paredes, Ellen S. (1994) Professor  
M.D. 1978 West Virginia University  
Spottswood, Stephanie E. (1991) Assistant Professor  
B.A. 1972 University of Michigan  
B.S. 1977 Montgomery College  
M.S.P.H. 1978 and M.D. 1987 University of North  
Carolina, Chapel Hill  
Tisnado, Jaime (1977) Professor  
B.S. 1957 and M.D. 1964 San Marcos National  
University, Peru  
Turner, Mary A. (1975) Professor  
B.S. 1967 and M.D. 1971 University of Alabama  
Yu, Jinxing, Assistant Professor

#### **Clinical faculty**

Lipper, Maurice H., Instructor  
Marx, William F., Clinical Instructor  
Szucs, Richard A., Assistant Clinical Professor

### **Division of Nuclear Medicine**

#### **Melvin J. Fratkan**

Professor and Head, Division of Nuclear  
Medicine (1969)  
B.A. 1960 Duke University  
M.D. 1964 Medical College of Virginia

Burke, Timothy S., Associate Professor  
Hirsch, Jerry I. (1970) Professor  
B.S. 1967 Brooklyn College of Pharmacy  
M.S. 1969 and Pharm.D. 1970 Philadelphia College  
of Pharmacy and Science  
Jolles, Paul R., Associate Professor  
Kalen, Joseph D. (1992) Assistant Professor  
B.S. 1978 State University of New York  
M.S. 1982 and Ph.D. 1987 Ohio State University  
Kurdziel, Karen Ann, Assistant Professor

### **Division of Radiation Physics and Biology**

#### **Panos P. Fatouros**

Professor and Head, Division of Radiation Physics  
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B.S. 1968 University of Florida  
Ph.D. 1975 Ohio State University

Corwin, Frank D. (1987) Instructor  
B.S. 1985 Virginia Polytechnic Institute and State  
University  
M.S. 1994 Virginia Commonwealth University  
Kraft, Kenneth A. (1983) Assistant Professor  
B.S. 1977 Westminster College  
M.S. 1979 and Ph.D. 1982 University of Rochester  
Wilson, John D. (1970) Associate Professor  
B.A. 1960 Carleton College  
M.A. 1963 and Ph.D. 1966 University of Illinois

## **Department of Surgery**

### **James P. Neifeld**

Professor and Department Chair

Abubaker, A. Omar\*, Assistant Professor  
Arancibia, Carlos U. \*, Professor  
Campbell, Robert L. \*, Associate Professor  
Chandler, Leonard\*, Assistant Professor  
Choi, Sung C. \*, Professor  
Diegelmann, Robert F. \*, Professor  
Diener, Randy M. \*, Assistant Professor  
Doarn, Charles R., Assistant Professor  
Ellenbogen, Kenneth A. \*, Professor  
Ellis Jr., Earl F. \*, Professor  
Fakhry, Samir M., Associate Professor  
Farquhar, Doris D., Instructor  
Friedman, Richard B. \*, Assistant Professor  
Garrett, Algin B. \*, Professor  
Giglio, James A. \*, Associate Professor  
Guttu, Arnold L. \*, Assistant Professor  
Hsia, Peng-Wie\*, Assistant Professor  
Hummel III, Russell S., Assistant Professor  
Isaacs, Jonathan E. \*, Assistant Professor  
King, Anne L. \*, Associate Professor  
Laskin, Daniel\*, Professor  
Levenson, James L. \*, Professor  
Lutz III, Harry A., Associate Professor  
Merchant, Randall E. \*, Professor  
Merrell, Ronald C., Professor  
Moray, Lawrence\*, Assistant Professor  
Newsome Jr., Heber H. \*, Professor  
Olbrisch, Mary E. \*, Associate Professor  
Povlishock, John T. \*, Professor  
Rafiq, Azhar, Assistant Professor  
Reines, H. David, Professor  
Seneca, Russell P. \*, Professor  
Silverman, Joel J. \*, Professor  
Speich, John E. \*, Assistant Professor  
Strauss, Robert A. \*, Associate Professor  
Sypniewski, Edward\*, Assistant Professor  
Tisnado, Jaime\*, Professor  
Ware, Joy Laurin\*, Professor  
Wise, Thomas N., Professor

#### **Emeriti faculty**

Bosher, Lewis H., Professor Emeritus  
B.S. 1935 University of Virginia  
M.D. 1940 Harvard University  
Brooks, James W., Professor Emeritus  
Graham, A. Stephens, Associate Clinical Professor  
Emeritus  
M.D. 1925 University of Minnesota  
Haynes Jr., Boyd W., Professor Emeritus  
M.D. 1941 University of Louisville  
Horsley, J. Shelton, Professor Emeritus  
B.S. 1950 and M.D. 1953 University of Virginia  
Koontz, Warren W., Professor Emeritus  
B.A. 1953 Virginia Military Institute  
M.D. 1957 University of Virginia  
Lee, Hyung Mo, Professor Emeritus  
B.S. 1945 Keijo Imperial University, Korea  
M.D. 1949 Seoul National University, Korea

Lower, Richard R., Professor Emeritus  
A.B. 1951 Amherst College  
M.D. 1955 Cornell University  
McGuire, Hunter H., Professor Emeritus  
Smith, Vernon, Professor Emeritus  
Williams Jr., Carrington, Clinical Professor Emeritus  
B.A. 1938 University of Virginia  
M.D. 1942 Harvard University

#### **Clinical faculty**

Ali Jr., Mohamed Reda, Clinical Instructor  
Armitage, John M., Assistant Clinical Professor  
Beazley III, Wyatt S., Associate Clinical Professor  
Bettinger, David A., Assistant Clinical Professor  
Blanton, Michael W., Assistant Clinical Professor  
Bosher, L. Paul, Assistant Clinical Professor  
Boyer, Allen S., Clinical Instructor  
Brown, Jeffery A., Assistant Clinical Professor  
Brown, Peter W., Assistant Clinical Professor  
Bryson, Gilbert, Associate Clinical Professor  
Burger Jr., Ray E., Assistant Clinical Professor  
Burke III, George W., Assistant Clinical Professor  
Byrd, Charles W., Associate Clinical Professor  
Calabrese, Vincent\*, Clinical Professor  
Christie Jr., Laurence, Clinical Instructor  
Coleman, Custis L., Clinical Professor  
Cote, Eric Paul, Assistant Clinical Professor  
D'Emilia, John C., Associate Clinical Professor  
Darden Jr., James, Assistant Clinical Professor  
Davis, Ronald K., Clinical Professor  
Deignan Jr., Joseph M., Associate Clinical Professor  
Deyerle, W. Minor, Clinical Professor  
Dolenc, Vinko V., Visiting Professor  
Doss Jr., Otis W., Assistant Clinical Professor  
Easterly III, Harry, Assistant Clinical Professor  
Evans, Martin T., Assistant Clinical Professor  
Gayle, William E., Assistant Clinical Professor  
Gillies, George Thomas, Associate Clinical Professor  
Haines, David, Clinical Instructor  
Hoefer, Richard A., Clinical Instructor  
Howell, Halstead D., Assistant Clinical Professor  
Hutcher, Neil E., Assistant Clinical Professor  
Justis, Deborah, Assistant Clinical Professor  
Kirsch, Wolff M., Clinical Professor  
Knaysi Jr., George A., Assistant Clinical Professor  
Lanning, David, Clinical Instructor  
Latiffi, Rifat, Associate Clinical Professor  
Leibovic, Stephen\*, Assistant Clinical Professor  
Lockhart, C. Gregory, Associate Clinical Professor  
Ludeman, Douglass, Clinical Instructor  
Maragh, Hallene A., Assistant Clinical Professor  
Martin, Amy Elizabeth, Assistant Clinical Professor  
Mathern, Bruce, Assistant Clinical Professor  
Mathews, Hallett H.\*, Associate Clinical Professor  
McBride, Corrigan L., Clinical Instructor  
McKain, Carey, Assistant Clinical Professor  
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Merchant III, Wilson, Clinical Instructor  
O'Donovan, Sean C., Assistant Clinical Professor  
Oliver Sr., Jerry A., Affiliate Assistant Professor  
Palminier, Jon S., Assistant Clinical Professor  
Ratliff, James E., Clinical Instructor  
Robertson, William, Assistant Clinical Professor  
Saggi, Bob H., Clinical Instructor

Sahni, K. Singh, Assistant Clinical Professor  
Sliwinski, Anthony, Clinical Instructor  
Smith, Crawford C., Assistant Clinical Professor  
Stalker, Campbell G., Assistant Clinical Professor  
Stewart, W. Bruce, Assistant Clinical Professor  
Stoneburner Jr., Frank D., Associate Clinical Professor  
Talman, Edward A., Associate Clinical Professor  
Tanner, William S., Assistant Clinical Professor  
Whitley, Ronald E., Assistant Clinical Professor  
Williams, Colonel Richard S., Associate Clinical Professor  
Winslow, Boyd, Assistant Clinical Professor  
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#### **Division of Cardiothoracic Surgery**

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#### **Division of General and Trauma Surgery**

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B.A. 1980 Bridgewater College  
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#### **Clinical faculty**

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Reines, Howard David, Clinical Professor  
Timmerman, William R., Assistant Clinical Professor

#### **Division of Pediatric Surgery**

##### **Charles E. Bagwell**

Professor and Head, Division of Pediatric  
Surgery(1993)  
B.S. 1972 Wake Forest University  
M.D. 1976 Bowman Gray School of Medicine

Haynes, Jeffrey H. (1996) Associate Professor  
Oiticica, Claudio, Associate Professor

#### **Clinical faculty**

Frantz, Frazier W., Assistant Clinical Professor

#### **Division of Plastic and Reconstructive Surgery**

##### **Austin I. Mehrhof Jr.**

Professor and Head, Division of Plastic and  
Reconstructive Surgery (1972)  
B.A. 1964 and M.A. 1965 Colgate University  
D.D.S. 1969 Columbia University  
M.D. 1975 Albany Medical College

Bandak, Abdalla Z., Assistant Professor  
Canoun, Cary C., Assistant Professor  
Pozet, Andrea L. (1989) Associate Professor  
B.A. 1975 Antioch College  
M.D. 1980 Universidad Autonoma de Guadalajara,  
Mexico  
Wornom III, Isaac L. (1989) Associate Professor  
B.A. 1977 Washington and Lee University  
M.D. 1981 University of Virginia  
Yager, Dorne R. (1990) Associate Professor  
B.S. 1976 Michigan State University  
Ph.D. 1985 University of North Carolina, Chapel Hill

#### **Emeritus faculty**

Cohen, I. Kelman (1972) Professor Emeritus

#### **Clinical faculty**

Bermant, Michael, Clinical Instructor  
Boykin Jr., Joseph V., Associate Clinical Professor  
Carrico, Thomas, Assistant Clinical Professor  
Davis, Kay S., Clinical Instructor  
Deconti, Robert W., Assistant Clinical Professor  
Dewire Sr., Thomas M., Clinical Instructor  
Horton, Charles E., Clinical Professor  
McKeown, Joseph E., Assistant Clinical Professor  
Merritt, Wyndell H., Clinical Professor  
Olshansky, Kenneth, Clinical Professor  
Petty, Carol T., Associate Clinical Professor  
Redman, Richard D., Assistant Clinical Professor  
Rowe, Douglas S., Associate Clinical Professor  
Ware, James L., Clinical Professor

## Division of Surgical Oncology

### Harry D. Bear

Professor and Head, Division of Surgical Oncology (1984)  
B.A. 1971 Yale University  
M.D. 1975 and Ph.D. 1978 Virginia Commonwealth University

Kaplan, Brian J., Assistant Professor

### Emeritus faculty

Lawrence Jr., Walter, Professor Emeritus

### Clinical faculty

Cornell, David, Clinical Instructor  
Clary, Richard M., Associate Clinical Instructor  
Parker, George, Clinical Instructor

## Division of Transplant Surgery

### Marc P. Posner

Professor and Head, Division of Transplant Surgery (1984)  
B.A. 1971 Bucknell University  
M.D. 1976 Medical College of Wisconsin

Cotterell, Adrian, Assistant Professor

Fisher, Robert A., Professor

Kimball, Pamela M. (1994) Professor

B.S. 1978 University of North Carolina, Chapel Hill

Ph.D. 1981 University of Alabama, Birmingham

Maluf, Daniel G., Assistant Professor

### Clinical faculty

Millis, James M., Assistant Clinical Professor

## Division of Urology

Grob, B. Mayer, Assistant Professor

Koo, Harry P., Associate Professor

Nseyo, Unyime O., Professor

### Clinical Faculty

Atwill, William H., Clinical Professor

Bates, Robley D., Clinical Instructor

Bigley Jr., H. Alan, Clinical Instructor

Bokinsky, Gary, Clinical Instructor

Boone, Elwood B., Clinical Instructor

Concodora, Joseph A., Clinical Instructor

Dodson Jr., Austin, Associate Clinical Professor

Duck, George B., Clinical Instructor

Feminella, John, Clinical Instructor

Frederick, L. Arnold, Clinical Instructor

Graham, Richard W., Assistant Clinical Professor

Graham, Sam D., Clinical Professor

Green, Lonny, Associate Clinical Professor

Hackler, Robert, Associate Clinical Professor

Hill, J. Edward, Associate Clinical Professor

Kozio, Isaac, Assistant Clinical Professor

Lanyi, Thomas R., Associate Clinical Professor

Morgan, William R., Associate Clinical Professor

Rollins, Kent L., Assistant Clinical Professor

Smith, Maurice J. V., Clinical Professor

Smith-Harrison, Leon, Associate Clinical Professor

Texter, John, Clinical Professor

Zaki, Kareem, Clinical Instructor

## Division of Veterans Administration Medical Center Surgical Services

### Thomas A. Miller

Professor and Head, Division of VAMC

## Division of Vascular Surgery

### Mark M. Levy

Associate Professor and Head, Division of Vascular Surgery

Myers, Stuart I., Professor

### Clinical faculty

Hyslop, John W., Assistant Clinical Professor

Londrey, Gregg Leslie, Assistant Clinical Professor



# School of Pharmacy

## Professional Programs

The School of Pharmacy was established officially in 1898; the University College of Medicine had a school of pharmacy when it opened in 1893. The two-year curriculum gave way to a three-year program in 1925, and in 1932 the school required four years of college work and a bachelor of science degree was awarded. In 1960, the program lengthened to a five-year course leading to a bachelor of science in pharmacy degree. In 1975, authority was granted to offer to selected students a six-year program leading to the doctor of pharmacy degree and this degree program was adopted as the only professional offering by the school in 1995. The School of Pharmacy currently enrolls students in a four-year professional doctor of pharmacy program curriculum following completion of at least two years of pre-professional studies taken elsewhere. In 1996 a part-time doctor of pharmacy program was offered that permits current bachelor of science in pharmacy degree holders to earn the doctor of pharmacy degree in a nontraditional format requiring students to come to campus infrequently. Since 1971, all pharmacy students have participated in a clerkship program. Students spend their final year in a variety of practice settings under the supervision of highly qualified faculty preceptors.

The authority to award graduate degrees in the pharmaceutical sciences was granted by the Graduate Council in 1952. Departments in the school have the responsibility for administering a graduate program leading to the M.S. and Ph.D. in pharmaceutical sciences. This program includes areas of specialization in medicinal chemistry, pharmaceuticals and pharmacy administration. These programs provide the preparation and research experience for academic, governmental and industrial careers. Graduate degrees in pharmaceutical sciences do not provide eligibility for licensure as a pharmacist.

Students may elect to pursue a joint Pharm.D./Ph.D. program. Such students must apply to, and be accepted by, both programs separately.

### Statement of purpose

The School of Pharmacy at Virginia Commonwealth University exists to provide exceptional programs benefiting the commonwealth of Virginia and society by offering the highest quality education and training for the development of health care practitioners, scientists, professional leaders and responsible citizens. These individuals are committed to shaping the health care world of tomorrow while serving society's health care needs today.

### Mission statement

The School of Pharmacy's mission fully supports the mission and goals of the university and the Medical College of Virginia Campus. The school's mission is to provide professional, graduate and postgraduate education, conduct pharmaceutical and biomedical research, and provide patient care and public service.

The school strives to provide an educational environment that encourages the following:

- excellence in scholarship
- excellence in teaching
- diversity and respect among students and faculty
- meeting the diverse needs of students
- commitment to service within the school, university, the profession and the community
- quality direct patient care experiences within the curriculum
- commitment to fostering the concept and importance of lifelong learning

Therefore, the school shares with teaching, the interdependent and almost inseparable objectives of research, service and patient care.

### Philosophy

In developing the curriculum of the School of Pharmacy, the faculty recognizes that an educated person should be prepared to assume a responsible and rewarding role

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Richmond, VA 23298-0581  
(804) 828-3000 • Fax (804) 828-7436  
<http://www.pharmacy.vcu.edu>

#### Victor A. Yanchick

Dean  
B.S., M.S., Ph.D.

#### Thomas P. Reinders

Associate Dean for Student Affairs  
B.S., Pharm.D.

#### William E. Smith

Associate Dean for Administrative Affairs  
Pharm.D., M.P.H., Ph.D.

#### Andrew L. Wilson

Associate Dean for Institutional Program  
Development  
B.S., Pharm.D.

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in society. The new paradigm of pharmaceutical care guides the school's curriculum committee and faculty in the design and implementation of the curriculum. Pharmaceutical care is the responsible provision of drug therapy by the pharmacist for the purpose of achieving definite outcomes that improve a patient's quality of life. In professional practice pharmaceutical care

focuses on the pharmacist's attitudes, behaviors, commitment, concerns, ethics, functions, knowledge, responsibilities and skills in the provision of drug therapy which achieves outcomes that yield improvement in a patient's quality of life. The educational program is designed to provide a sound, scientific and professional background for both those who will enter the practice of pharmacy directly and those who wish to continue graduate education in the pharmaceutical sciences. It also includes courses in the arts and humanities in order to provide the student with a broad educational base which will permit participation in community life, not only as a professional, but also as an informed, concerned citizen. The professional curriculum is rigorous and highly demanding of the student's time; employment must not be allowed to interfere with the educational process. The faculty has adopted a document entitled "Expected Competencies of Doctor of Pharmacy Graduates" and has expanded these competencies into knowledge, skills and attitudes that have been implemented in the curriculum.

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## Career opportunities

Graduation from the School of Pharmacy affords the opportunity to pursue one of several career paths. The most familiar role is as a provider of pharmaceutical care to ambulatory patients in a community setting. In this setting the pharmacist may be self-employed or may be an employee of an organization such as an independent pharmacy, a corporate chain of pharmacies, or a managed care pharmacy in a health maintenance organization.

Many pharmacists also practice in institutional settings such as hospitals or other health care institutions.

The pharmaceutical industry also employs pharmacists in several areas including manufacturing, quality control, research, sales and as medical service representatives who call on physicians. Opportunities also are available in various government services, including the public health service and veterans affairs, as well as in government-operated laboratories.

In most cases, those who aspire to engage in independent research or to teach seek graduate degrees in the pharmaceutical sciences or in specialty fields related to pharmacy.

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## Facilities

The School of Pharmacy is located in the Robert Blackwell Smith Jr. Building at 12th and East Clay streets. This building — named in honor of a distinguished former dean of pharmacy, former president of the Medical College of Virginia, and former provost of the MCV Campus — was completed in 1984 with the help of contributions from many alumni and friends of the School of Pharmacy. Classes for students in pharmacy also are conducted in Sanger Hall, located between 11th and 12th streets on East Marshall Street. In conjunction with the VCU Health System, students receive clinical experience in the VCU Health System's MCV Hospitals and Clinics. Other facilities available for teaching include area hospitals and pharmacies. The major library holdings are in the Tompkins-McCaw Library at 12th and East Clay streets.

Location in a major health sciences center provides excellent opportunities for interdisciplinary research and access to clinical facilities. The school is well equipped for graduate research and provides leadership to the Institute for Structural Biology and Drug Discovery at the Biomedical Research Park. The institute makes use of synthetic medicinal chemistry, X-ray crystallography, NMR, protein and nucleic acid chemistry, bacterial enzymology and molecular pharmacology to promote drug development. Several businesses have been spawned through the institute and two new drugs have entered clinical trials.

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## Accreditation

The Doctor of Pharmacy program is fully accredited by the American Council on Pharmaceutical Education (ACPE). The school is a member of the American Association of Colleges of Pharmacy.

ACPE has an obligation to assure itself that any institution that seeks accreditation status for its professional program conducts its affairs with honesty and frankness. Complaints from other institutions, students, faculty, or the public against a school of pharmacy, including tuition and fee policies, and as related to ACPE standards, policies or procedures, shall be placed in writing in detail by the complainant and submitted to ACPE at 20 N. Clark St., Suite 2500, Chicago, IL 60602-5109.

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## Programs

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### Professional

The school offers the doctor of pharmacy degree through two program pathways. Students who do not have a B.S. degree in pharmacy enroll in the first professional program, which is completed in four years of full-time study at the school following completion of the two-year minimum pre-pharmacy requirements. Students holding the bachelor of science in pharmacy degree who wish to upgrade their professional skills and degree enroll in a program that can be completed through part-time study in a nontraditional program.

### Graduate

The school offers programs of graduate study leading to the degrees of master of science and doctor of philosophy. Students may specialize in pharmacokinetics, pharmaceuticals, medicinal chemistry, pharmacotherapy, biopharmaceutical analysis or pharmacy administration.

Interested students with graduate study potential should consult the appropriate graduate program director or department chair. Information on procedures and policies for graduate studies can be found in the graduate section of this bulletin.

### Licensing and reciprocity

The Virginia Board of Pharmacy holds qualifying examinations for licensure on an ongoing basis throughout the year. Applicants for the examination must present evidence that their first professional degree was granted by a school of pharmacy recognized by the board. This school is among those recognized. Applicants must also present evidence of completion of 1,500 hours of practical experience. Completion of the school's Pharm.D. Program satisfies 1,200 hours of this requirement.

Those students who intend to be licensed in Virginia should contact the Virginia Board of Pharmacy, 6603 W. Broad St., 5th Floor, Richmond, VA 23230-1712.

Virginia has reciprocal licensing agreements with all states except California and Florida.



## Doctor of Pharmacy Program admission requirements

Applicants for admission to the School of Pharmacy must attend an accredited college for at least two academic years (six quarters or four semesters) and complete the specified course requirements prior to admission.

Students planning to seek a degree in pharmacy upon high school graduation should plan their high school program to meet the requirements for admission in the college where they will take the prerequisite work for admission into the VCU School of Pharmacy.

The minimal admission requirements are listed. (Meeting these requirements does not, however, guarantee acceptance into the VCU School of Pharmacy.)

- A. A statement affirming the applicant's good moral character signed by one or more pharmacists, physicians or former teachers may be requested by the Admissions Committee.
- B. An official transcript from the student's primary college and official transcripts from all colleges attended. Applications are considered by the Admissions Committee only after transcripts on file show completion of no less than two semesters or three quarters of college work. When offered, an acceptance is contingent upon satisfactory completion of specific work that may be in progress.
- C. Applicants must offer the required credits in the following subject areas for a total of at least 68 semester-hours (102 quarter-hours).

	Semester Hours	Quarter Hours
Biology (lecture and laboratory)	8.0	12.0
General chemistry (lecture and laboratory)	8.0	12.0
Organic chemistry (lecture and laboratory)	8.0	12.0
Physics (lecture and laboratory)	8.0	12.0
English	6.0	9.0
Mathematics (at least 3 semester- hours or 4.5 quarter-hours must be calculus)	6.0	9.0
Statistics	3.0	4.5
Public speaking	3.0	4.5
Electives	18.0	27.0
	68.0	102.0

Credits earned through Advanced Placement Tests of the College Board are not acceptable in meeting the total 68 semester-hours requirement. Such

AP credits may excuse a student from taking a specific non-science course such as English, but the credits must be made up through additional electives. AP credits in science (e.g., biology, chemistry) or mathematics (e.g., calculus) must be made up with courses in kind. Generally, this requirement is achieved by taking advanced-level courses (e.g., physical chemistry as a substitute for AP credit in general chemistry).

Dual credit courses taken during high school may be considered acceptable for transfer credit pending review of college transcripts.

All elective credits must be in liberal arts or behavioral sciences (natural sciences, physical education, or studio course credits are not accepted).

Credits earned in gross human anatomy, biochemistry, microbiology or physiology are part of the curriculum of the School of Pharmacy and therefore are not acceptable in meeting the prerequisites.

In unusual cases, students may be admitted subject to completion of course credit prior to graduation.

- D. Applicants must have earned a creditable average ("C" or better) overall, and in the courses specified, to meet minimum academic requirements for admission.
- E. Applicants for admission must apply online through PharmCAS, a centralized application service for pharmacy schools. Paper applications will not be accepted. The PharmCAS Web site at <http://www.pharmcas.org> provides further details. In addition to the application submitted electronically to PharmCAS, a supplemental application will be sent directly to VCU's School of Pharmacy. This supplemental application is available from the School of Pharmacy.
- F. The dean and the committee on admissions may require a personal interview with the applicant.
- G. Applicants are required to take the Pharmacy College Admission Test before admission.
- H. Applicants whose first language is not English should submit scores from the Test of English as a Foreign Language (TOEFL), the Test of Spoken English (TSE) or other proof that the applicant's command of English is sufficient to allow successful completion of all of the requirements of the program.

- I. Students are admitted only at the start of the academic year. An applicant must complete one full year of the academic prerequisites before an application can be reviewed. The Admissions Committee begins reviewing applications during September of the year preceding admission. It is to the applicant's advantage to apply during the fall of the year before expected enrollment in the School of Pharmacy. Applicants are accepted pending satisfactory completion of all prerequisite courses. Notification usually occurs in early spring.
- J. Prior to enrolling, successful applicants must meet the immunization requirements set forth in the "General Information" section of this bulletin. Prior to entering the fourth professional year, students must provide proof of immunity to hepatitis B, a negative PPD test, and satisfy all other university immunization requirements.

The following criteria are considered in judging applicants:

- college attended
- academic workload carried
- college overall GPA
- chemistry, biology and math proficiency
- outside activities and achievements in high school and college
- Pharmacy College Admission Test (PCAT) scores
- written and oral communication skills
- extent of exposure to pharmacy practice
- extent of exposure to other health disciplines
- personal interview

Time demands for this full-time program are rigorous. In general, the first three years require a Monday-Friday (8 a.m.-6 p.m.) commitment for lectures, conferences, laboratories and off-campus visits to area pharmacy practice sites. The fourth year is devoted to experiential learning at sites located throughout Virginia. Students enrolling in the four-year professional degree program must agree to the possibility of being assigned to sites beyond the Richmond-metropolitan area (e.g., eastern, northern or western Virginia). Candidates must assess personal obligations prior to seeking application.

VCU does not discriminate against qualified applicants for admission who have disabilities, and seeks to provide reasonable accommodation to applicants and admitted

students who identify themselves as having disabilities. Academic requirements essential to the program or to directly related licensing requirements will not be substituted. Upon acceptance into the program, students in need of accommodation may contact the MCV Campus coordinator for students with disabilities at (804) 828-9782 to discuss their needs.

Further information and application materials may be obtained by writing to the Chair, Admissions Committee, School of Pharmacy, Virginia Commonwealth University, P.O. Box 980581, Richmond, VA 23298-0581. Applicants also may call a toll-free telephone number, 1-888-212-9287 for assistance.

## Pharm.D. Program curriculum

### First professional year

First semester	credits
ANAT 505 Anatomy	3.0
MEDC 501 Medicinal Chemistry I	2.0
BIOC 523 Biochemistry I	2.0
PCEU 503 Principles of Pharmacy	4.0
PCEU 517 Pharmacy Skills Laboratory I	1.0
PHAR 521 Pharmacy and Health Care Systems	2.5
PHAR 525 Pharmacy Communications	2.0
PHAR 557 Pharmacy Practicum I	0.5
	17.0

### Second semester

BIOC 524 Biochemistry II	3.0
PHIS 506 Physiology and Pathophysiology	5.0
MICR 501 Microbiology	3.5
PCEU 506 Biopharmaceutics and Pharmacokinetics	4.0
PCEU 518 Pharmacy Skills Laboratory II	1.0
PHAR 558 Pharmacy Practicum II	0.5
	17.0

### Second professional year

#### First semester

PHTX 603 Pharmacology I	3.0
MEDC 602 Principles of Pharmaceutical Analysis	2.0
MEDC 603 Medicinal Chemistry II	2.5
PCEU 617 Pharmacy Skills Laboratory III	1.0
PHAR 627 Principles of Pharmacy Practice Management	4.5
PHAR 643 Pharmacotherapy I	3.5
PHAR 657 Pharmacy Practicum III	0.5
	17.0

#### Second semester

PHTX 604 Pharmacology II	4.0
MEDC 604 Medicinal Chemistry III	2.5
PCEU 606 Applied Pharmacokinetics	2.5
PHAR 644 Pharmacotherapy II	4.5
PHAR 658 Pharmacy Practicum IV	0.5
Elective(s)	2.0-3.0
	16.0-17.0

### Third professional year

#### First semester

PHAR 701 Pharmacy Ethics	2.0
PHAR 743 Pharmacotherapy III	3.0
PHAR 745 Drug Literature Evaluation I	4.0
PHAR 747 Physical Assessment	1.0
PHAR 757 Pharmacy Practicum V	0.5
Elective(s)	5.0-6.0
	15.5-16.5

#### Second semester

PHAR 718 Pharmacy Skills Laboratory IV	1.0
PHAR 724 Pharmacy Law	3.0
PHAR 744 Integrated Therapeutics	3.0
PHAR 748 Self-Medication Awareness and Community Health	3.0
PHAR 758 Pharmacy Practicum VI	0.5
Elective(s)	5.0-6.0
	15.5-16.5

### Fourth professional year

PHAR 760 Acute Care Rotation	5.0
PHAR 761 Institutional Practice Rotation	5.0
PHAR 762 Geriatrics Care Rotation	5.0
PHAR 763 Ambulatory Care Rotation	5.0
PHAR 764 Community Practice Rotation	5.0
PHAR 765 Elective Rotation I	5.0
PHAR 766 Elective Rotation II	5.0
PHAR 767 Elective Rotation III	5.0
	40.0

Approximately half of the students in the fourth professional year may be obliged to travel and reside some distance from Richmond to participate in pharmacy practice clerkships. No refund of payments for tuition, fees, or other expenses may be expected by the students since credit is granted for the time spent in this phase of the program. No stipends may be earned by the students in connection with any professional practice program for which the school grants credit.

## Nontraditional Pathway Doctor of Pharmacy Program admission requirements

Applicants for this program must hold a bachelor of science in Pharmacy degree and a current license to practice pharmacy in the United States.

Prior to enrolling, successful applicants must meet the immunization requirements set forth in the "General Information" section of this bulletin. Prior to beginning the practice rotations students must provide proof of immunity to hepatitis B.

VCU does not discriminate against qualified applicants for admission who have disabilities, and seeks to provide reasonable accommodation to applicants and admitted students who identify themselves as having disabilities. Academic requirements essen-

tial to the program or to directly related licensing requirements will not be substituted. Upon acceptance into the program, students in need of accommodation may contact the MCV Campus coordinator for students with disabilities at (804) 828-9782 to discuss their needs.

## Nontraditional Pathway Doctor of Pharmacy Program curriculum

The recommended course work totals 48 credits: 18 credits for didactic courses and 30 credits for clinical clerkships. Waivers for up to nine didactic credits and 20 clerkship credits may be made based on the student's professional practice portfolio or testing out of didactic courses.

The prerequisite course in biostatistics may be taken from VCU faculty or credit may be granted for an equivalent course taken within the past five years. To determine course equivalency, a course syllabus and transcript of the final grade must be submitted for review.

The Professional Practice Evaluation Workshop is to explain the process for the preparation and submission of a portfolio of practice experience and what has been learned from these practice experiences. The portfolio will be used by the program committee for decisions of waiver of clinical experience credits.

Clinical experience (clerkships) may be taken full time or part time at a minimum of 10 hours per week. Clerkships may be completed in the student's practice site if adequate access to patients is available.

### Didactic and experiential components

#### Recommended

Professional Practice Evaluation Workshop

Required courses — didactic	credits
Evaluation of Drug Literature and Information Sources	3
Clinical Pharmacokinetics	3
Physical Assessment	1
Advanced Pharmacotherapeutics I	4
Advanced Pharmacotherapeutics II	4
Assessment of Pharmacy Services	3
	18

#### Required courses — experiential

Clinical Experience I	5
Clinical Experience II	5
Clinical Experience III	5
Clinical Experience IV	5
Clinical Experience V	5
Clinical Experience VI	5
	30

## The combined Pharm.D./M.S. and Pharm.D./Ph.D. programs

In their first two years (P-1 and P-2), the Pharm.D./M.S. or Pharm.D./Ph.D. students will complete the required Pharm.D. curriculum while attending research seminars, and possibly attend graduate courses as electives. After admission into the graduate program, the students will take required graduate courses in lieu of Pharm.D. courses during their P-3 (G-1) year followed by graduate research during the summer. During their G-2 through G-4 years, the students will complete the graduate course requirements and their required Pharm.D. clerkships and work on their graduate research project. Stipends and tuition may be provided for students serving as graduate teaching or research assistants. During that period, the student will follow procedures prescribed to Ph.D. students in pharmaceutical sciences.

Students may focus on the following research areas within the School of Pharmacy: pharmacotherapy, pharmacokinetics, biopharmaceutical analysis, pharmaceuticals/physical pharmacy, pharmacy administration and medicinal chemistry. Also, students may focus on the following research areas within the School of Medicine: pharmacology and toxicology. The choice of research area determines the required graduate course work.

The combined Pharm.D./M.S. and Pharm.D./Ph.D. programs in the School of Pharmacy are full-time programs of professional education while offering an opportunity for advanced study in pharmaceutical sciences. The programs recognize the need for pharmacy practitioners with excellent research skills in clinical, academic, industrial and regulatory environments. The programs are designed to take advantage of efficiencies in both the Pharm.D. and the M.S. or Ph.D. programs, and allows students in the combined program to complete the program requirements of both programs after five or six years with both degrees being awarded at the same graduation ceremony.

Students may be admitted into the programs before or during their first two years of enrollment in the Pharm.D. program. Applicants must demonstrate a good academic record, experience in research (e.g., during summer research fellowships with the school's graduate faculty), successful completion of the GRE; and their application must be sponsored by a graduate faculty.

## Pharm.D./M.B.A. Program

The VCU School of Pharmacy and School of Business offer a dual degree program that allows students in the Pharm.D. program to apply and simultaneously enroll in the M.B.A. degree. The Pharm.D./M.B.A. program is designed to prepare pharmacists for careers that require expertise in both pharmacy and business theories and principles. The program is designed to take advantage of efficiencies in both the Pharm.D. and M.B.A. programs. With careful planning, students enrolled in the dual degree program may complete requirements of both degree programs in five years.

### Curriculum requirements

To earn both degrees, students will complete the following requirements. For the Pharm.D. program, all required Pharm.D. prerequisite and required courses must be taken unless waived by the appropriate representative of the School of Pharmacy. For the M.B.A. program requirements, the foundation courses listed below must be taken. Courses may be waived for students who have taken the equivalent material at the undergraduate level.

ACCT 507 Fundamentals of Accounting  
ECON 500 Concepts in Economics  
FIRE 520 Financial Concepts of Management  
MGMT 524 Statistical Elements of Quantitative Management  
MGMT 540 Management Theory and Practice  
MRBL 530 Fundamentals of the Legal Environment of Business  
MRBL 570 Concepts and Issues in Marketing

The following nine courses of the M.B.A. Advanced Program will be required for each student:

**Lockstep semester I:** (to be taken at same time)  
INFO 661 Information Systems for Managers  
MGMT 641 Organization Leadership and Project Team Management

**Lockstep semester II:** (to be taken at same time)  
INFO 664 Emerging Issues in Information Technology  
MGMT 675 Operations Management

### Remaining Advanced Program Courses:

ACCT 608 Managerial Accounting  
ECON 610 Managerial Economics  
FIRE 621 Cases in Financial Management  
MGMT 642 Business Policy  
MRBL 671 Marketing Management

Three M.B.A. elective courses may be taken in the School of Business or by completing approved Pharm.D. electives and/or an applied pharmacy practice experience in pharmacy management, as individually approved by the Director of Graduate Programs in the School of Business. The key to successful completion of the Pharm.D./M.B.A. dual degree program will be timely and continuing advising from both the appropriate School of Pharmacy adviser and the director of Graduate Programs in the School of Business. For this reason, students are encouraged to seek admission to the dual degree program as early in their Pharm.D. program as possible.

### Admission requirements

Students interested in pursuing the Pharm.D./M.B.A. dual degree program must first obtain admission to the Pharm.D. program. Admitted Pharm.D. students who desire to add the M.B.A. degree to their program must apply to the M.B.A. program using the Application for Graduate Study found at the School of Graduate Studies Web site: <http://www.vcu.edu/graduate>.

A complete application to the M.B.A. program includes:

- Application for Graduate Study and Application Fee.
- Request for In-state Tuition Rates (as applicable).
- Three letters of reference, including a letter of support from the School of Pharmacy.
- Official transcripts from all universities previously attended, including current VCU transcript.
- Current GMAT test score.
- Interview with director of Graduate Programs in School of Business.

### Tuition and financial aid considerations

Upon admission to the M.B.A. program, a Pharm.D. student will be considered a dual degree-seeking student. Students will most often register for a mix of School of Business courses and School of Pharmacy courses each semester of the program. The School of Pharmacy and School of Business have agreed that dual degree seeking students will be considered Pharm.D. students in years P1, P2, P3 and P5. Students will be considered M.B.A. (graduate) students in year P4. When categorized as Pharm.D., a student will be charged tuition and fees from the School of Pharmacy and will be

eligible to receive financial aid awards as a Pharm.D. student. When categorized M.B.A. (graduate,) a student will be charged the graduate tuition and fee rate of the academic campus and will be eligible to receive financial aid awards as a graduate student.

## Academic regulations

Matriculation in the School of Pharmacy implies a willingness on the part of students to comply with university rules and regulations and to conduct themselves in a manner befitting members of the profession the students seek to enter. The program of study and regulations regarding courses of study, student conduct, etc., are subject to modification without notice. All rules and regulations set forth in this bulletin, as well as other statements issued by administrative officers of the university, apply until further notice.

## Probation

Students may be placed on probation by either the Committee on Admissions or the Academic Performance Committee. Probation is a status indicating that the student's scholarship is deficient and is expected to be improved to a level considered to be satisfactory by the faculty. Students who fail to meet probationary stipulations may expect to have their normal progress through school interrupted. They may be required to attend summer school, to repeat a year, or to withdraw. Students on probation are not eligible to be nominated for offices in the student government nor to represent the school in athletics or other extracurricular activities. Students on probation are expected to stop, or drastically curtail, any outside employment. Each student who is placed on probation receives a letter in which the details of that individual's probation are described.

## Outside work

In general, the faculty believes that students should give first priority to their school work. Students able to maintain academic standing are not restricted with respect to outside employment. Students in academic difficulty will be advised to cease or drastically curtail any outside employment.

## Honor code

All students are governed by the honor code and regulations of the student body organization. A detailed description of the Honor Council's rules of procedure is available upon request.

## Faculty advising program

Each student in the School of Pharmacy is assigned a faculty adviser who can assist the student with academic and personal problems. The faculty adviser also serves as the student's mentor in the pharmacy practicum. Students usually remain with the same adviser throughout their attendance in the School of Pharmacy.

There is a faculty adviser to the Interfraternity Council as well as an adviser for each of the professional pharmacy fraternities.

Each of the student chapters of professional pharmacy organizations on campus operates with a faculty adviser.

## Attendance regulations

The following regulations apply specifically to students enrolled in the Doctor of Pharmacy Program in all of their required and elective courses offered by departments in the School of Pharmacy and to required basic science courses offered by the School of Medicine. In courses in which these regulations apply, other students enrolled with pharmacy students also are subject to the regulations.

1. The faculty considers class attendance at lectures to be an important component in the successful acquisition of knowledge and skills required of the Doctor of Pharmacy candidate. Students are strongly encouraged to attend all classes and conferences. An individual faculty member may require attendance in his or her course and establish penalties for those who are absent without an excuse from the dean's office.
2. Attendance at laboratory and pre-laboratory classes is mandatory. Students must complete all laboratory assignments before a passing grade can be assigned. An excused absence from the dean's office is required for missing a laboratory or prelaboratory class with the ability to make up the work with credit. Students without an approved absence are still required to make up the work but will not receive credit toward their course grade.
3. Students must take tests (e.g., quizzes, laboratory practicals, examinations) and complete all other assignments at the time designated by the course coordinator. Students must recognize that faculty may give unannounced tests at any time during a course, consistent with documentation in a course syllabus. Students who miss any test in any course without an excused absence from the dean's office will receive a grade of zero for the specific test.
4. Attendance during each assigned clerkship period is mandatory. If a student is unable to attend to required clerkship responsibilities because of illness or other exceptional circumstances, the preceptor must be notified immediately. It is the responsibility of the student to also notify the clerkship coordinator concerning a plan to make up the absence, with the approval of the preceptor. Documentation of the absence and approval to make up the absent time will be maintained in the student's record.
5. Absences may be excused under certain conditions. Requests for excuses for unavoidable absences must be submitted to the dean's office, on an Absence Record form, within 24 hours of returning to the School of Pharmacy. The student must complete the Absence Record form with an explanation for the absence. Further explanation, if necessary, may be provided to the associate dean for admissions and student services. It is a violation of the honor code to make false or misleading statements on the Absence Record form. In the event of an unexcused absence, the student is responsible for all work missed.
6. A guiding principle in determining whether or not an absence will be excused is that the absence is caused by circumstances beyond the student's control. The following are considered valid excuses for being absent from a class or clerkship.
  - a. **Illness, a medical emergency, a dental emergency.** The school normally accepts the student's judgment that the condition was serious enough to justify the absence from class; however, the school reserves the right to require a medical opinion, particularly if the period of absence is prolonged or is repetitive. The school will require a written medical opinion

when a student is absent from taking a scheduled test or final examination. If the absence is a result of a medical emergency, the student will be required to sign a written release for the school to obtain documentation from their physician describing the exact nature of the illness or emergency. This record will be submitted to the associate dean for admissions and student services as a confidential document.

**b. Death of a relative or friend.**

Students will be excused from class to attend funerals. Absence beyond the day of the funeral will be excused for periods of mourning required by a student's religious or cultural tradition, or when a student is too grief-stricken to return immediately to class.

**c. Mandatory court appearance.**

**d. Mandatory religious observances.**

Students who anticipate absences from class because of religious obligations should submit a list of their anticipated absences at the beginning of each semester to the dean's office. The student must also submit an absence form following each absence.

**e. Failure of private, public or university transportation.**

Students are expected to take reasonable precautions to assure that the transportation method used is fully functional (e.g., maintaining personal automobile, avoiding the last possible return airline flight to Richmond). Proof of transportation failure will be required.

**f. Attendance at professional meetings.**

Students in good academic standing may receive an excused absence from class to attend a meeting of a professional pharmacy organization. The student must complete an Absence Record form in advance of attending a professional meeting. A policy statement containing eligibility criteria is distributed to all students.

7. Tardiness is a form of absence which also may be excused using the criteria mentioned above. Students arriving late for a test may be given the test without an excused absence but will not be allowed extra time beyond the scheduled termination of the test.

Once a student has completed the test and left the room, late arriving students will not be permitted to take the test unless the absence is excused.

8. Absences that are not reported within 24 hours after the student returns to school will be considered unexcused. It is not the responsibility of a faculty member to determine whether an absence is excused. This determination will be made by the dean's office.
9. Students are expected to make every effort to keep abreast of their assignments during an absence. They should also be prepared to take tests upon their return to the school or at the discretion of the faculty member after considering the student's academic schedule. If, in the opinion of the dean's office, the nature of a student's absence made it impossible for that student to prepare for a test, the student will be granted an extension for taking the test.
10. A faculty member should not give a make-up test before confirming that a student's absence has been excused. The faculty member usually provides an equivalent make-up test within a reasonable period of time. The type and format of the make-up exam will be determined by the faculty member. Within the framework of the honor code, it may be possible to administer the same examination if administered no more than 48 to 72 hours after the originally scheduled examination. Any make-up examination should be scheduled as soon as possible to avoid impeding the student's academic progress.

## Promotion

Attending pharmacy school is not a right acquired simply by conforming with the entrance requirements and paying tuition and fees. For this reason the dean and the Academic Performance Committee require that marginal or failing performance be improved or that the student withdraw from school. "D" grades are indicative of marginal performance. Careful consideration is given during the promotions process not only to the student's grades but also to his or her probity, industry, and scholastic ability.

These guidelines delineate the course of action to be taken by the committee. Decisions regarding individual students will be made in accordance with these guide-

lines. Consideration will be given to pertinent information and extenuating circumstances for individual cases. The following statements present the prominent features of the promotions process.

1. Students are evaluated for progress at the end of each semester. The Academic Performance Committee assesses student progress for each of these periods. At the end of the fourth year the entire faculty will decide whether or not students have satisfied all requirements for graduation. Promotion decisions are based on achievement during the year under review and on the student's overall progress.
2. Students who have passed the work of an academic year with grades of "C" or better in all courses will ordinarily be advanced to the next higher class.
3. The Academic Performance Committee for the year involved thoroughly reviews the academic record of each student who fails to pass a course, receives a "D" grade, does not maintain a GPA of 2.0 or better for the year or semester in question, or is on probation. Following this review, the committee may recommend promotion on a probationary basis, require a repeat of all or a part of previous work or terminate the student's enrollment.
4. Students who fail two or more courses during the program will be dismissed.
5. A student who earns "D" grades for six credits or more of class work in any year and/or a GPA of less than 2.0 in any year will be subject to academic probation, dismissal or may be asked to repeat the year.
6. Students will be subject to academic probation, dismissal, or may be asked to repeat the year if they earn more than one "D" or "F" grade in any one of the following sequences of related courses: basic health sciences, medicinal chemistry, pharmacy and pharmaceuticals, pharmacotherapeutics and pharmacy administration.
7. Students who fail to meet conditions of probation will be required to withdraw or repeat a year's work. Students will not be allowed to repeat more than one year of the curriculum.
8. A student must have passed all courses from the first three years of the curriculum to qualify for entry into the final year of the program.

## Withdrawal

Students finding it necessary to withdraw from the School of Pharmacy must comply with the provisions for withdrawal set by the university.

The dean of the School of Pharmacy will not approve a request for withdrawal until the student has submitted a letter of resignation.

Students withdrawing without approval and failing to check out laboratory lockers will be assessed a fee and any charges resulting from the need to replenish the contents of the lockers.

## Re-admission

Students seeking re-admission to the School of Pharmacy will be evaluated on their total academic record. Applicants for readmission to the first professional year will not be given priority over new applicants but must compete with them on an equal basis. Re-admission in advanced standing will be considered on a space-available basis.

## Graduation

Students are recommended and approved for the doctor of pharmacy degree by the faculty of the School of Pharmacy.

Candidates must meet the following requirements:

1. Be of good moral character.
2. Complete satisfactorily all the required work in a timely fashion, which will not normally exceed five years from the date of initial enrollment.
3. Pay all fees.
4. Complete the last year's work for the degree in residence in this school.
5. Be present at the commencement-related exercises unless excused in advance by the dean in writing.
6. Complete satisfactorily the minimum number of required clerkship rotations and demonstrate the attainment of minimum competencies.

## Honors and awards

### Rho Chi

This national honorary pharmaceutical society established Lambda Chapter at the School of Pharmacy in 1929. Charters for chapters of this organization are granted only to groups in colleges that are members

in good standing of the American Association of Colleges of Pharmacy. Election to membership in the society is based on high attainment in scholarship, character, personality, and leadership. Students become eligible for consideration during the second professional year of the pharmacy program.

Lambda Chapter annually awards certificates in recognition of outstanding scholarship to students who have completed the pre-pharmacy and first professional year pharmacy curriculum. Also, Lambda Chapter selects one member of the fourth professional year class who is recognized for excellence in scholarship, leadership, personality and character. The name is inscribed on a plaque displayed in the School of Pharmacy.

### Phi Lambda Sigma

This national pharmacy leadership society established a Beta Nu Chapter at the School of Pharmacy in 2000. Charters for chapters of this organization are granted only to groups in colleges that are members in good standing of the American Association of Colleges of Pharmacy and which are accredited by the American Council of Pharmaceutical Education.

Election to membership in the society is based on the demonstration of dedicated service and leadership in the advancement of pharmacy and evidence of high moral and ethical character.

### Academic Excellence Award

This award recognizes excellence in academics.

### APhA-ASP Professionalism Award

This award recognizes the ideals of professionalism and excellence in patient care in all aspects of the recipient's academic pharmacy career. The recipient must have demonstrated exceptional service and commitment to the profession through involvement in professional organizations and other extracurricular learning opportunities.

### ASHP Student Leadership Award

This award recognizes a student with leadership experience and demonstrated interest in health-system pharmacy practice.

### Award of Excellence in Clinical Communication

This award recognizes high academic achievement and outstanding communication skills.

### Award of Excellence in Nonprescription Medication Studies

This award recognizes demonstrated academic achievement in the study of nonprescription drug therapy.

### Clinical Research Award

This award recognizes the demonstrated contribution to clinical research.

### Community Practice Achievement Award

This award recognizes a recipient's demonstrated interest in pursuing a career in community pharmacy.

### Dean's Award

This award recognizes outstanding achievement and unselfish devotion to his or her class, the school, the university and the profession.

### Distinguished Service Award

This award recognizes a student with demonstrated academic excellence, leadership and a service commitment to the university and greater community.

### Excellence in Pharmacy Award

This award recognizes high academic achievement and professional motivation.

### Health-System Practice Award

This award recognizes an individual with a demonstrated commitment to health-system pharmacy practice.

### Leadership Achievement Award

This award recognizes an individual with demonstrated leadership qualities.

### MCV Alumni Association Award

This award recognizes an individual with demonstrated contributions to alumni activities.

### **Nonprescription Drug Therapy Award**

This award recognizes an individual with demonstrated motivation, knowledge and skill in the domain of nonprescription drug therapy.

### **Outstanding Leadership Award**

This award recognizes an individual with demonstrated qualities and abilities necessary to practice community pharmacy.

### **Patient Care Award**

This award recognizes an individual with the ability to apply clinical knowledge into practical patient care.

### **Pharmacy Communications Award**

This award recognizes an individual with demonstrated effectiveness in pharmacist/patient communication.

### **Phi Lambda Sigma Student Leadership Award**

This award is a peer recognition award for a member with demonstrated contributions to Phi Lambda Sigma.

### **Research Excellence Award**

This award recognizes excellence in research by a student completing a dual degree.

### **SNAPhA Leadership Award**

This award is a peer recognition award for a member with demonstrated contributions to SNAPhA.

### **Technology Excellence Award**

This award recognizes an individual with demonstrated excellence in the application of technology to enhance the profession.

### **VASP Chapter Award**

This award is a peer recognition award for a member with demonstrated contributions to VASP.

### **VPhA Research and Education Foundation Award**

This award recognizes an individual in the top 25 percent of his or her class with

ideals of professionalism and excellence in patient care in all aspects of their academic pharmacy career; demonstrated exceptional service and commitment to the profession through involvement in professional organizations and other extracurricular learning opportunities; and the intention to apply their knowledge to achieve better outcomes of drug therapy and health care delivery as a practitioner of pharmaceutical care upon graduation.

### **VSHP Excellence in Health-system Pharmacy Award**

This award recognizes an individual with demonstrated excellence in health-system pharmacy practice.

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### **Named Scholarships**

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#### **Henry Addington Academy of Independent Pharmacy Scholarship**

This scholarship is awarded annually to a student who has completed one full year of study in the School of Pharmacy, expresses a formal intention to practice in independent pharmacy upon graduation, has experience working in an independent community pharmacy practice, provides a letter or letters of recommendation from an independent pharmacist and has maintained a satisfactory academic record in the School of Pharmacy. A separate application must be completed, including reference letters.

#### **Lindsay W. and Laura Butler Memorial Scholarship**

This scholarship is awarded annually to a pharmacy student who has demonstrated financial need and academic achievement.

#### **Carolyn Coleman (Stone) Scholarship**

This scholarship is awarded annually to a pharmacy student who has demonstrated financial need and academic achievement.

#### **William S. Cooper Scholarship**

This scholarship is awarded annually to an African-American student who is in the upper half of their class academically and who has a demonstrated financial need.

### **Sheldon W. Fantle Scholarship**

This scholarship is awarded annually to a pharmacy student who has demonstrated scholastic performance and leadership qualities and is from the city of Alexandria or Fairfax or the counties of Arlington, Fairfax, Loudon or Prince William.

### **Russell Fiske Scholarship Fund**

This scholarship is awarded annually to a pharmacy student in financial need who demonstrates service to the community and pharmacy profession and is involved in activities that benefit the school and/or university.

### **William W. and Patsy Gray Scholarship**

This scholarship is awarded annually to a pharmacy student who has demonstrated scholastic performance and leadership qualities by involvement in professional extracurricular activities

### **Linda Nixon Harvey Memorial Scholarship**

This scholarship is presented annually to a rising fourth professional year student who has maintained high academic standards while exhibiting leadership, professional integrity, and outstanding personal qualities.

### **Richard Jacobs Memorial Scholarship**

This scholarship is available annually to a student who has a demonstrated financial need and academic achievement

### **David D. Marshall Memorial Scholarship**

This scholarship is presented annually to a married fourth professional year student who ranks academically in the top half of the class and who has demonstrated financial need and academic achievement.

### **Nick G. Nicholas Memorial Award**

This scholarship is awarded annually to a pharmacy student who has demonstrated financial need and academic achievement.

### **M. Bruce Rose Scholarship**

This scholarship is presented annually to a student who demonstrates scholastic ability and financial need. Preference shall be given to applicants from the Virginia Pharmacists Association Third District (i.e., Petersburg, Dinwiddie, Chester, Hopewell area).

### **Samuel and Gilbert Rosenthal Foundation Scholarship**

This scholarship is awarded annually to a pharmacy student who has demonstrated financial need, academic achievement, and a commitment to service.

### **W. Roy Smith Memorial Scholarship**

This scholarship is awarded annually to a senior pharmacy student demonstrating academic talent, strong leadership ability, and involvement in community activities. A separate application must be completed, including reference letters.

### **Glenn B. Updike, Sr. Scholarship**

This scholarship is available to a student who demonstrates scholastic ability and has financial need. Preference shall be given to applicants who are from the Danville, Va. area.

### **Warren E. Weaver Scholarship**

This scholarship is awarded annually to a student who is determined to be outstanding in character, leadership and academic performance.

### **C. Eugene White Scholarship**

This scholarship is awarded annually to a senior pharmacy student in financial need who demonstrates service to the community and pharmacy profession and is involved in activities that benefit the school and/or university

### **Edward E. Willey Pharmacy Scholarship Award for Outstanding Scholarship and Leadership**

This scholarship is presented annually to a rising fourth professional year student who is determined to be outstanding in character, as judged by faculty and classmates; leadership ability, as demonstrated by participation in and leadership of student organizations; and academic perform-

ance, as demonstrated by the attainment of a 3.75 grade-point average during the first three years in pharmacy school. A separate application must be completed, including reference letters.

## **Organizations**

### **Virginia Academy of Students of Pharmacy**

Students in the School of Pharmacy have an opportunity to become members of this organization which is affiliated with the Virginia Pharmacists Association and the American Pharmaceutical Association. The group meets regularly presenting programs of interest to the student body.

### **Student Chapter Virginia Society of Health-System Pharmacists**

Pharmacy students who are interested in the practice of pharmacy in organized health care settings may become members.

### **Student National Pharmaceutical Association**

This student subdivision of the National Pharmaceutical Association works to define the future role of minority health professionals in the community.

### **Student Association of Community Pharmacists**

This student organization focuses on issues of interest to students who plan to pursue careers in community pharmacy. It is affiliated with the National Community Pharmacists Association.

### **Student Chapter of the Academy of Managed Care Pharmacists**

This student organization serves the interests of students who plan to pursue a career in the managed care practice environment.

### **Student Chapter of the International Society for Pharmacoeconomics and Outcomes Research**

This organization fosters interest among professional and graduate students in pharmacoeconomics and health outcomes assessment.

## **Professional fraternities**

Chapters of Phi Delta Chi, Kappa Psi, and Kappa Epsilon are active within the student body. These fraternities extend invitations, according to the rules of the Interfraternity Council, to pharmacy students to become members. Eligibility for consideration is based upon academic achievement as determined by the Interfraternity Council and the dean's office.

## **Financial aid**

See the Professional Studies at VCU chapter of this bulletin.

## **Courses of instruction**

Enrollment in courses included in the doctor of pharmacy curricula summarized on the preceding pages requires the approval of the dean of the School of Pharmacy unless the student has been admitted to the Doctor of Pharmacy Program.

## **Department of Medicinal Chemistry**

### **William H. Soine**

Associate Professor and  
Interim Chair (1978)  
B.S. 1970 University of Minnesota  
M.S. 1975 University of Kansas  
Ph.D. 1978 University of Kansas

Abraham, Donald J. (1988) Professor  
B.S. 1958 Pennsylvania State University  
M.S. 1959 Marshall University  
Ph.D. 1963 Purdue University

Desai, Umesh R. (1998) Assistant Professor  
B.S. 1983 University of Baroda  
M.S. 1985 Indian Institute of Technology  
Ph.D. 1991 Indian Institute of Technology

Dukat, Malgorzata (1994) Associate Professor  
M.S.C. 1983 Technical University  
Ph.D. 1989 Academy of Medicine

Glennon, Richard A. (1975) Professor  
B.S. 1967 Northeastern University  
M.S. 1969 Northeastern University  
Ph.D. 1973 State University of New York

Kellogg, Glen E. (1988) Associate Professor  
B.S. 1979 University of New Mexico  
Ph.D. 1985 University of Arizona

Kier, Lemont B. (1977) Professor  
B.S. 1954 Ohio State University  
Ph.D. 1958 University of Minnesota



May, Everette Lee\* (1977) Professor of Medicinal Chemistry and Pharmacology and Toxicology  
B.A. 1935 Bridgewater College  
Ph.D. 1939 University of Virginia

Reynolds, Kevin A. (1997) Professor  
B.S. 1978 University of Southampton  
Ph.D. 1987 University of Southampton

Rife, Jason P. (1998) Assistant Professor  
B.S. 1987 University of Tampa  
Ph.D. 1994 University of South Florida

Safo, Martin K. (2000) Associate Professor  
B.S. 1985 University of Cape Coast  
Ph.D. 1991 University of Notre Dame

Scarsdale, J. Neel\* (1988) Assistant Professor of Medicinal Chemistry and Biochemistry  
B.S. 1982 University of Arkansas  
Ph.D. 1989 Yale University

Westkaemper, Richard B. (1982) Associate Professor  
B.S. 1974 University of California  
M.S. 1978 University of Kansas  
Ph.D. 1980 University of Kansas

Windle, Bradford E. (2000) Associate Professor  
B.S. 1977 San Diego State University  
Ph.D. 1986 University of Maryland

Wright, Christine S.\* (1980) Professor of Medicinal Chemistry and Biochemistry and Molecular Biophysics  
B.S. 1965 University of Indiana  
Ph.D. 1969 University of California, San Diego

Young, Richard (1990) Associate Professor  
B.S. 1975 University of Cincinnati  
M.S. 1977 Virginia Commonwealth University  
Ph.D. 1981 Virginia Commonwealth University

**Adjunct faculty**

Burnett                      Joshi

**Affiliate faculty**

May                              Rice  
Rzeszutski                      Scarsdale  
Wright, C.                      Wright, H.

**Emeriti faculty**

Andrako, John, Professor Emeritus  
B.S. 1947 Rutgers University  
M.S. 1949 Rutgers University  
Ph.D. 1953 University of North Carolina

Boots, Marvin R., Associate Professor Emeritus  
B.S. 1958 St. Louis College of Pharmacy  
M.S. 1960 University of Wisconsin  
Ph.D. 1963 University of Kansas

Richard, Alfred J., Professor Emeritus  
B.S. 1953 Lowell Technical Institute  
M.A. 1955 Clark University  
Ph.D. 1958 Clark University

Smith, J. Doyle, Professor Emeritus  
B.S. 1942 University of Virginia  
M.S. 1949 University of Virginia  
Ph.D. 1946 University of Virginia

Stubbins, James F., Professor Emeritus  
B.S. 1953 University of Nevada  
M.S. 1958 Purdue University  
Ph.D. 1965 University of Minnesota

Weaver, Warren E., Professor Emeritus  
B.S. 1942 University of Maryland  
Ph.D. 1947 University of Maryland

Windridge, Graham C., Associate Professor Emeritus  
Pharm.D. 1965 University of California, San Francisco  
Ph.D. 1969 University of California, San Francisco

\* Joint appointment

## Courses in medicinal chemistry (MEDC)

### MEDC 310/CHEM 310 Medicinal Chemistry and Drug Design

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: One year of organic chemistry. This course is designed to expose undergraduate chemistry, biology and pre-medicine majors to the history, theory and practice of medicinal chemistry. The course will emphasize a combination of fundamentals and applications of drug design. In particular, the molecular aspects of drug action will be discussed. Special emphasis will also be placed on the methods used by medicinal chemists to design new drugs.

### MEDC 501 Medicinal Chemistry I

Semester course; 4 lecture hours per week for 8 weeks. 2 credits. Offered: I. This course integrates the chemical and physical properties of organic molecules with biological effects. Particular emphasis is placed on heterocyclic chemistry, mechanisms of drug decomposition, mechanisms of enzymatic reactions, and stereochemistry as they relate to drug action and biodisposition. Molecular physico-chemical phenomena are described which pertain to biological events.

### MEDC 526 Research Techniques in Medicinal Chemistry

Semester course; 0-2 lecture and 2-8 laboratory hours. 1-4 credits. The theory and application of classical, instrumental, and computer techniques used in medicinal chemistry research are presented.

### MEDC 532 Medicinal Chemistry for Nurse Anesthetists

Semester course; 4 lecture hours. 4 credits. A review of the principles of organic chemistry and bio-organic chemistry presented as a series of lectures covering the structure-activity relationships, metabolism, and mechanism of action of selected agents.

### MEDC 541 Survey of Molecular Modeling Methods

Semester course; lecture and laboratory hour. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

### MEDC 601 Advanced Medicinal Chemistry I

Semester course; 1 lecture hour. 1 credit. Offered: I. Introduces the general concepts important in medicinal chemistry, including drug dynamics, drug macromolecule interactions, drug design and quantitative structure-activity relationships.

### MEDC 602 Principles of Pharmaceutical Analysis

Semester course; 1.5 lecture and 1 laboratory hours. 2 credits. Offered: I. A study of the underlying principles and practical limitations of analytical procedures with emphasis on techniques most applicable to the qualifying of substances in biological fluids. The laboratory work usually involves the testing and evaluation of over-the-counter analytical products currently sold or used in pharmacies. Emphasis is also placed on the clinical applications and interpretations of measuring endogenous and exogenous chemicals present in biological fluids. This course includes material related to both statistics and ethics.

### MEDC 603 Medicinal Chemistry II

Semester course; 2.5 lecture hours. 2.5 credits. Offered: I. A study of the general principles of drug action at the molecular-level. Emphasis is placed on physical, chemical, and biochemical properties of drug substances, the relationships between chemical structure and pharmacological activity, the molecular basis for drug-receptor interactions, and drug metabolism. A major goal is to prepare students so that they may more readily assimilate and apply new information about existing and future therapeutic agents.

### MEDC 604 Medicinal Chemistry III

Semester course; 2.5 lecture hours. 2.5 credits. Offered: II. Prerequisite: MEDC 603. A study of the general principles of drug action at the molecular-level. The philosophy and goals of MEDC 603 are applied to the discussion of therapeutic classes of agents not covered in MEDC 603.

### MEDC 610 Advanced Medicinal Chemistry III

Semester course; 2 lecture hours. 2 credits. Offered: II. Prerequisites: MEDC 601 or the permission of the instructor. Introduces concepts for understanding the medicinal chemistry of the central nervous system.

### MEDC 620 Advanced Medicinal Chemistry III

Semester course; 2 lecture hours. 2 credits. Offered: II. Prerequisite: MEDC 601 or the permission of the instructor. Reviews the concepts necessary for enzyme inhibitor design. Emphasizes the design of new agents to treat disease states by enzyme inhibition.

### MEDC 630 Theoretical Methods in Drug Design

Semester course; lecture and laboratory hours. 2 credits. Prerequisites: MEDC 601, MEDC 610 or 620, or permission of instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes and physical property correlations. Computational chemistry problems will be emphasized in the laboratory.

### MEDC 642 Nucleoside, Nucleotide, Carbohydrate and Peptide Chemistry

Semester course; 1 lecture hour. 1 credit. Surveys nucleoside, nucleotide, carbohydrate and peptide chemistry with emphasis on their synthesis.

### MEDC 643 Regioselective Drug Metabolism

Semester course; 1 lecture hour. 1 credit. Surveys drug biotransformation reactions. Emphasizes the molecular aspects of Phase I and Phase II drug metabolism.

### MEDC 644 Asymmetric Synthesis

Semester course; 1 lecture hour. 1 credit. Reviews the major asymmetric chemical transformations, including mechanisms, scope and synthetic utility.

### MEDC 645 Introduction to Heterocyclic Chemistry

Semester course; 1 lecture hour. 1 credit. Introduces the chemistry of heterocyclic compounds. Emphasizes heterocyclic nomenclature and the reactions/reactivity of heterocyclic systems.

### MEDC 670 Advanced Molecular Modeling Theory and Practice

Semester course; 3 lecture/laboratory hours. 3 credits. Prerequisite: MEDC 641 or permission of instructor. Examines the principles and application of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

### MEDC 690 Departmental Research Seminar

Semester course; 1 lecture hour. 1 credit. Reports presented by students, staff, and visiting lecturers, current problems and developments in pharmaceutical and medicinal chemistry are discussed.

### MEDC 691 Special Topics in Medicinal Chemistry

Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training.

### MEDC 697 Directed Research in Medicinal Chemistry

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree.

## Department of Pharmaceutics

### Peter R. Byron

Professor and Department Chair (1988)  
B.S. 1970 University of Manchester  
Ph.D. 1973 University of Manchester

Blondino, Frank E. (2000) Research Associate Professor  
B.S. 1991 Virginia Commonwealth University  
Ph.D. 1995 Virginia Commonwealth University

Boudinot, F. Douglas (2002) Professor and  
Director of Graduate Studies  
B.S. 1978 Springfield College  
Ph.D., 1985 State University of New York at  
Buffalo

Edinboro, Leslie E. (2000) Research Associate Professor  
B.S. 1982 Gannon University  
M.S. 1984 West Virginia University

Francioni-Proffitt, Donna (2002) Assistant Professor  
B.S. 1979 Virginia Commonwealth University

Gao, Ning (2003) Research Assistant Professor  
B.S. 1982 West China University of Medical  
Sciences  
M.S. 1986 West China University of Medical  
Sciences  
Ph.D. 1990 West China University of Medical  
Sciences

Hindle, Michael (1997) Research Associate Professor  
B.S. 1989 University of Bradford, UK  
Ph.D. 1992 University of Bradford, UK

James, John R. (1988) Research Assistant  
B.S. 1987 University of Oregon

M.S. 1991 Virginia Commonwealth University  
Ph.D. 1992 Virginia Commonwealth University  
Karnes, H. Thomas (1984) Professor and Associate  
Dean

A.A.S. 1974 Illinois Central College  
B.S. 1977 Illinois State University  
M.S. 1980 University of Florida  
Ph.D. 1984 University of Florida

Peart, Joanne (1996) Visiting Assistant Professor  
B.S. 1991 University of Bath  
Ph.D. 1996 University of Bath

Poyner, Wesley J. (1980) Associate Professor  
B.S. 1972 University of Texas, Austin  
B.S. 1974 University of Texas, Austin  
Ph.D. 1980 University of Texas, Austin

Sakagami, Masahiro (2000) Research Assistant  
Professor  
B.S. 1989 Waseda University  
M.S. 1991 Waseda University

Sarkar, Mohamadi A. (1998) Associate Professor  
B.S. 1981 University of Bombay  
M.S. 1985 University of Bombay  
Ph.D. 1990 Virginia Commonwealth University

Venitz, Jurgen (1988) Associate Professor  
M.D. 1980 Universitat Des Saarlandes, Germany  
Ph.D. 1986 Universitat Des Saarlandes, Germany

Wu-Pong, Susanna (1993) Associate Professor  
B.S. 1986 University of Texas, Austin  
Ph.D. 1992 University of California, San Francisco

Yanchick, Victor A. (1996) Professor and Dean, School  
of Pharmacy  
B.S. 1962 University of Iowa  
M.S. 1966 University of Iowa  
Ph.D. 1968 Purdue University

### Emeriti faculty

Ruggiero, John S., Professor Emeritus  
B.S. 1952 St. John's University  
M.S. 1954 Duquesne University  
Ph.D. 1958 University of Connecticut  
Smith, Harold L., Associate Professor  
B.S. 1956 Medical College of Virginia  
Ph.D. 1962 Medical College of Virginia

### Affiliate faculty

Dalby	Farr
Figg	Hinderling
Marroum	Noonan
Notari	Rypacek
Tam	

## Courses in pharmaceutics (PCEU)

### PCEU 503 Principles of Pharmacy

Semester course; 4 lecture hours. 4 credits. Offered: I. A study of the chemical and physico-chemical principles fundamental to the development and use of medication dosage forms. Topics discussed include pharmaceutical calculations, prescription orders, weights and measures, theory of solutions, official waters, solution stabilizing agents and preservatives, sterile products, and ophthalmic products. In addition, there are lectures on descriptive and inferential statistics and pharmaceutical quality control.

### PCEU 506 Biopharmaceutics and Pharmacokinetics

Semester course; 3 lecture and 1 conference hour. 4 credits. Offered: II. This course describes drug and dosage form stability and linear pharmacokinetics, to include discussion of compartmental modeling, physiological concepts of pharmacokinetics, and clearance and absorption concepts. The course includes material related to statistics. Also, this course describes the physico-chemical and biopharmaceutical principles, fundamental to the development of pharmaceutical dosage forms including disperse systems, semi-solids, solids and novel drug delivery systems. Formulation, manufacture, control and relevant patient-pharmacist interactions will be addressed.

### PCEU 517 Pharmacy Skills Laboratory I

Semester course; 3 laboratory hours. 1 credit. Offered: I. This competency-based course includes an introduction to medication distribution systems, prescription dispensing, patient counseling and monitoring, compounding solution drug preparations and drug information retrieval. Graded as honors or pass/fail.

### PCEU 518 Pharmacy Skills Laboratory II

Semester course; 3 laboratory hours. 1 credit. This competency-based course includes an introduction to IV infusion systems and pumps, the preparation of sterile products, a continuation of medication distribution systems and compounding semi-solid and solid dosage forms. Graded as honors or pass/fail.

### PCEU 606 Applied Pharmacokinetics

Semester course; 2 lecture and 1 conference hour per week. 2.5 credits. Offered: II. This course extends the concepts of pharmacokinetics as applied to dosage regimen design, pharmacokinetic variability, drug interactions, and statistical strategies for individualization of drug therapy.

### PCEU 612 Advanced Physical Pharmacy and Biopharmaceutics

Semester course; 3 credits. Phase equilibria and phase transfer kinetics related to biopharmaceutics will be covered. The relationship between physicochemical properties of a drug dosage form and drug absorption, along with the correlation between in vitro tests used to evaluate dosage forms and in vitro measures of drug absorption will be covered. The course assumes that the student has a basic understanding of pharmacokinetics, physical chemistry and statistics.

### PCEU 617 Pharmacy Skills Laboratory III

Semester course; 3 laboratory hours. 1 credit. Offered: I. This competency-based course includes patient counseling and analysis of patient self-monitoring self-dosing devices, detection of errors and omissions in prescription dispensing, reading patient charts and taking medication histories, taking telephone prescriptions, and compounding total parenteral nutrition solutions. Graded as pass/fail.

### PCEU 622 Clinical Pharmacokinetics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction. (Nontraditional program)

### PCEU 624 Pharmacokinetics

Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, and digital computers for analysis of linear and nonlinear biologic systems.

### PCEU 625 Pharmaceutical Analysis

Semester course; 1 lecture and 1 laboratory hour. 2 credits. Theory and practice of selected analytical techniques for the quantitative analysis of drugs in body fluids and other matrices. Emphasis is on method validation, and immunoassay methodologies. Laboratory sessions will provide "hands on" experience with modern methods of drug analysis.

### PCEU 690 Pharmaceutics Research Seminar

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmaceutics. Research Seminar.

### PCEU 691 Special Topics in Pharmaceutics

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the training in research.

### PCEU 697 Directed Research in Pharmaceutics

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

## Department of Pharmacy

### Ronald E. Polk

Professor and Interim Chair (1976)  
B.S. 1971 Washington State University  
Pharm.D. 1974 University of Michigan

Ballentine, Rollin L. (1987) Associate Professor

B.S. 1971 University of Cincinnati  
Pharm.D. 1973 University of Michigan

Barr, William H. (1972) Professor

B.S. 1960 University of California, San Francisco  
Pharm.D. 1961 University of California, San Francisco  
Ph.D. 1966 University of California, San Francisco

Bentley, Michael L. (2001) Assistant Professor

Pharm.D. 1992 Mercer University

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Pharm.D. 1978 Mercer University

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Pharm.D. 1998 Virginia Commonwealth University

Brophy, Donald F. (1996) Associate Professor

Pharm.D. North Dakota State University

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Pharm.D. 1994 University of Arizona

Cappuzzo, Kimberly (2002) Assistant Professor

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M.S. 1996 Virginia Commonwealth University  
Pharm.D. 2001 Virginia Commonwealth University

Carroll, Norman V. (1989) Professor

B.S. 1976 University of North Carolina, Chapel Hill

M.S. 1979 University of North Carolina, Chapel Hill  
Ph.D. 1982 University of North Carolina, Chapel Hill

Cheang, Kai I. (2001) Assistant Professor

Pharm.D. 1998 University of Texas

Collins, Rebecca J. (2001) Assistant Professor

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Pharm.D. 2000 Virginia Commonwealth University

Comstock, Thomas J. (1982) Associate Professor

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Pharm.D. 1979 University of Utah

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B.A. 1990 State University of New York at Genesee

Garnett, William R. (1976) Professor

B.S. 1969 Virginia Commonwealth University  
Pharm.D. 1973 Philadelphia College of

Pharmacy and Science

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B.S. 1986 Virginia Polytechnic Institute and State University

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Pharm.D. 1994 Virginia Commonwealth University

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B.S. 1979 University of North Nebraska  
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B.S. 1982 University of Alberta  
M.Ed. 1987 University of Toronto

Ph.D. 1999 University of Georgia

Holdford, David A. (1995) Associate Professor

B.S. 1980 University of Illinois  
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Kirkwood, Cynthia K. (1985) Associate Professor

B.S. 1982 Virginia Commonwealth University  
Pharm.D. 1985 Virginia Commonwealth University

Kirkwood, Craig F. (1984) Associate Professor

B.S. 1980 State University of New York, Buffalo  
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Krieg Jr., Richard J.\* (1975) Professor of Anatomy

B.S. 1967 University of San Francisco  
M.S. 1969 University of California, Los Angeles

Ph.D. 1975 University of California, Los Angeles

Lamb, Robert G.\* (1974) Professor of Pharmacology and Toxicology

Ph.D. 1970 University of North Carolina at Chapel Hill

Lynch, Thomas (2001) Assistant Professor

B.S. 1971 University of Notre Dame  
B.S. 1986 Massachusetts College of Pharmacy  
Pharm.D. 2001 University of Arkansas

Miederhoff, Patrick A. (1985) Associate Professor

B.S. 1963 St. Louis College of Pharmacy  
M.S. 1971 University of Louisville

Pharm.D. 1974 University of Kentucky

Ph.D. 1985 University of New Orleans

Morgan, Harvey B. (1997) Instructor

B.S. 1952 Hampden-Sydney College  
B.S. 1955 Virginia Commonwealth University

Morgan, Laura A. (2002) Assistant Professor  
Pharm.D. 2001 University of North Carolina at Chapel Hill

O'Neal, Charles H.\* (1968) Associate Professor of Microbiology and Immunology

B.S. 1957 Georgia Institute of Technology  
Ph.D. 1963 Emory University

Plum, Mary-Beth F. (2000) Assistant Professor

B.S. 1997 Duquesne University  
Pharm.D. 1998 Duquesne University

Polk, Ronald E. (1976) Professor

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Pharm.D. 1974 University of Michigan

Puckett, Brian J. (2001) Assistant Professor

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Pyles, Michael A. (1983) Assistant Professor

B.A. 1977 University of Florida  
M.A. 1979 University of Florida

Ph.D. 1990 Virginia Commonwealth University

Reinders, Thomas P. (1974) Associate Professor and Associate Dean

B.S. 1970 University of Cincinnati  
Pharm.D. 1972 University of Cincinnati

Rose, S. Rutherford (1999) Associate Professor

B.A. 1978 University of Virginia  
B.S. 1983 Virginia Commonwealth University

Pharm.D. 1986 Philadelphia College of Pharmacy and Science

Shelton, Keith R.\* (1970) Professor of Biochemistry and Molecular Biophysics

B.A. 1963 University of Virginia  
Ph.D. 1968 University of Illinois

Shuford, Veronica P. (1999) Assistant Professor

B.S. 1990 Virginia Commonwealth University  
M.Ed. 1996 Virginia Commonwealth University

Sicat, Brigitte T. (2000) Assistant Professor

Pharm.D. 1998 Virginia Commonwealth University

Slattum, Patricia W. (1996) Assistant Professor

B.S. 1985 Virginia Commonwealth University  
Pharm.D. 1992 Virginia Commonwealth University

Ph.D. 1992 Virginia Commonwealth University

Small, Ralph E. (1975) Professor

B.S. 1973 University of Toronto  
Pharm.D. 1975 Duquesne University

Smith, William E. (1997) Associate Professor and Associate Dean

Pharm.D. 1965 University of California  
M.P.H. 1976 University of California

Ph.D. 1994 Auburn University

Whitaker, Amy L. (2001) Assistant Professor

Pharm.D. 1998 Virginia Commonwealth University

Williams, Melissa I. (1999) Assistant Professor

B.S. 1994 Virginia Commonwealth University  
Pharm.D. Virginia Commonwealth University

Wilson, Andrew L. (1998) Associate Professor, Director of VCU Health System's Department of Pharmacy and Associate Dean

B.S. 1976 University of Connecticut  
Pharm.D. 1978 Wayne State University

Witorsch, Raphael J., Professor of Physiology

Ph.D. Yale University

Yunker, Nancy S. (1985) Assistant Professor

B.S. 1983 Purdue University  
Pharm.D. 1984 Purdue University

**Clinical faculty**

Adams	Allen	Fish	Forbes	Miller	Mitchell
Altonen	Alwood	Fore	Foster	Mongold	Moolhuyzen
Anama	Anderegg	Fulco	Fulks	Moore	Moran
Anderson, G.	Anderson, S.	Fuller	Furhman	Morgan	Morikawa
Arnold	Arp	Gaasrud	Gallagher	Morreale	Moseley
Ashby	Atkins	Garber	Garrett	Moussavian	Mulkey
Aust	Bailey	Garvin	Gendron, L.	Mullins, L.	Mullins, R.
Baird	Ballentine, L.	Gendron, R.	Gilley	Munden	Murphy
Bandy	Banner	Gilmer	Golterman	Nangia	Nash
Baumhover	Belardo	Goode	Goodman	Neal	Nett
Belton	Berringer	Goodwyn	Gordon	Neufer	Newman
Bethea	Bevins	Gouldin	Grandinetti	Ngo	Nguyen
Biggers	Bird	Grasmick	Grasso	Noonan	Norman
Black	Blanchard	Greene	Greygor	Nuckols	O'Brian
Blankenship	Blanton	Gross	Grubbs	Ogden	Oley
Blevins	Blosser-Milton	Gumpper	Gutshall	Olmsted	Orr
Bocwinski	Bodie	Hagaman	Haghighi/Cecilia	Ostrosky	Overstreet
Borgie	Boykin	Haines, D.	Haines, K.	Owens	Palmen
Bradley, B.	Bradley, G.	Hall, J.	Hamilton	Papanastasiou	Paradisi
Bragg	Breslow	Hampton	Hancock	Parker	Patterson
Brink	Bruening	Hawley	Heimbach	Payne	Peard
Buchanan	Buck	Hilburger	Hinderling	Pearson	Pedigo
Buddie	Bullock	Hirsh	Hobbs	Perdue	Perry
Burgess	Burke	Hodges, M.	Hodges, N.	Pettetier	Phillips
Burton	Butler	Holder	Hollyfield	Pickard	Piechowicz
Cale	Caliguiri	Holmes	Holroyd	Pierce	Pigue
Calis	Candady	Holzbach	Hoyle	Pingle	Podlesny
Carig	Carney	Huang	Huckstep	Poff	Potter
Carson	Cary	Hudson	Huff	Price	Raganit
Caturano	Chang	Huffman, J.	Huffman, P.	Rainey	Rapp
Chapman	Chary	Humphries	Ingram	Ratcliffe	Rawls
Chase	Chenault	Iranmanesh	Jaggard	Reavis	Reece
Cherici	Chernitzer	Jameson	Jennings	Reed-Kane	Reichart
Chicoine	Chu	Johnson, A.	Johnson, C.	Reiter	Rex
Clarke	Clary	Johnson, M.	Johnson, S.	Reynolds	Rice
Clay	Close	Jones, R.	Jones, T.	Rich	Richard
Cohen	Cole	Jones, S.C.	Junk	Riegert	Roberts
Coleman, C.	Coleman, J.	Kale	Kaltsoinis	Robertson	Rock
Colgan	Colpo	Kamrad	Kassaye	Rodgers	Roisen
Colyer	Cooksey	Keefer	Kellum	Rose	Rosemeier
Counts	Cox	Kelly	Kennedy	Rotz	Rumble
Creecy	Cundiff	Kim	Klien	Ruth	Rutherford
Davis, J.	Davis, L.	Knight	Kockler	Rypacek	Sadr
Davis, N.	Davis, R.	Kreidler/Moss	Kwon	Sandberg	Sannicandro
DeAngelo	Delapp	Lane	Lantz	Saunders	Scales
Deters	Diep	Lawson	LeBel	Scarsdle	Schiefer
Dobberke	Dodd	Lee, D.	LeFever	Schmitz-Reichart	Schrader
Donald	Drost	Lenihan	Lenihan	Schreier	Schubert
Drummond	Duke	Lester	Lewis	Schweitzer	Seaman
Duncan	Duong	Lialios-Ramfos	Ligh	Sebastian	Seneker
Dye	Eades	Linas	Lipps	Sergent	Shannonhouse
Early	Edloe	Lockridge	Logue	Sharp	Shawyer
Edwards	Eichel	Lubkowski	Lucas	Shearon	Shelor
Eklund	Elam	Mahrenholz	Maillet	Shepperson	Showalter
Elkins	Elliott	Marks, E.	Marks, R.	Silek	Sillato
Elzarian	Eng	Marrourn	Marshall	Silvester	Silvester
Ensey-Nasir	Ernat	Martin	Mason	Sim	Simmons
Ervin	Evans	Massiah	Matthews	Sisson, E.	Skaar
Exum	Farr	Mayer	Mayes	Slifka	Smith, C.
Farrar	Fender	McClanahan	McDearmon	Smith, D.	Smith, H. J.
Fenstermacher	Ferguson	McDonald	McDowell	Smith, J.K.	Smoot
Ferraro	Figg	McKissick	Mednick	Snead	Snider
Fillmore	First	Merrill	Messerian	Spellman	Spicer
		Metz	Milarn	Stallings	Stanisic

Stanley, A.	Stanley, D.
Stark	Stell
Stewart	Stiltner
Stiltner	Stogdale
Stone	Stoneburner
Stredler	Susco
Swartz	Swiger
Szalwinski	Tabb
Tam	Tarasidis
Targos	Tatum
Thomas	Thompson
Tidwell	Tiffany
Tittermary	Tran
Trimble	Troy
Tullio	Varney
Vo	Volstorf
Walko	Wallace
Walpole	Walter
Watt	Weakley
Weaver, J.	Weaver, M.
Weisiger	Werely
White	Wiatt
Williams, A.	Williams, G.
Williams, M.	Willis
Wilmot-Pater	Wilson
Witter	Wright
Wyant	Wyckoff
Young	Zeisner

#### Emeriti faculty

Hilliard, Norman L., Assistant Professor Emeritus  
B.S. 1953 and M.Ed. 1970 Virginia Commonwealth University

McKenney, James M., Professor Emeritus  
B.S. 1965 Hampden-Sydney College  
B.S. 1968 Virginia Commonwealth University  
Pharm.D. 1972 Wayne State University

White, C. Eugene, Associate Professor Emeritus  
B.S. 1950 Medical College of Virginia  
J.D. 1962 University of Richmond

\* Joint appointment

## Courses in pharmacy (PHAR)

### PHAR 502 Pharmacotherapeutics

Semester course; 2 lecture hours. 2 credits.  
Prerequisite: PHIS 501. Focus on the application of basic pharmacotherapeutic principles of drug categories to patient management.

### PHAR 521 Pharmacy and the U.S. Health Care System

Semester course; 2.5 credits. Offered: I. This course introduces students to the American health care system and acquaints them with the features of that system that directly influences the practice of pharmacy and the provision of pharmaceutical care. The course pays particular attention to pharmacy as a profession, the practice of pharmacy, and the delivery of pharmaceutical care in a complex environment by considering the structure, function, and associated policy considerations of the health care delivery system. The course also provides a general overview of the health care

delivery system. The course also provides a general overview and an intensive analysis of interrelationships among health care consumers, providers, organizational arrangements, and regulatory and reimbursement mechanisms. The course includes material related to statistics and ethics.

### PHAR 525 Communication in Pharmacy

Semester course; 1.5 lecture and the average of 1 conference hour per week. 2 credits. Offered: I. A study of the theory and techniques of communication and counseling techniques related to pharmacy practice. Supervised practice in developing basic communication skills.

### PHAR 557, 558 Pharmacy Practicum I, II

Semester courses; 6 conference hours, 14 experiential hours per semester. .5 credit. Offered: I, II. These courses are the first of a six-semester sequence. Students will have direct contact with patients and pharmacy practice sites to allow understanding of the effect of illness and medication on patients and the impact of pharmaceutical care services. Graded as honors or pass/fail.

### PHAR 608 Clinical Radiopharmacy

Semester courses; 1 lecture and 2 laboratory hours. 2 credits. Students receive training in the safe use, preparation, calibration, quality control, and clinical diagnostic use of current and investigational radiopharmaceuticals in nuclear medicine practice. Emphasis will be placed on obtaining patient medication histories for the evaluation of agents capable of in-vivo and in-vitro radioisotopic test modification.

### PHAR 627 Principles of Pharmacy Practice Management

Semester course; 4.5 lecture hours. 4.5 credits. Offered: I. This course describes social, behavioral, and financial theories pertinent to the management of pharmacy practices in community, hospital and other settings. Emphasis will be placed on marketing and pharmacoeconomic concepts applied to the practice of pharmacy.

### PHAR 631 Advanced Hospital Pharmacy Management I

Semester course; 3 lecture hours. 3 credits. Classical, social, and systems views of management are introduced with emphasis on the uses of implicit control. The sociology of professions and the nature of professional work are explored; the management of the professional's work is discussed in detail. Design and operation of integrated drug information, drug distribution, and drug use control systems is explored. (Nontraditional program)

### PHAR 632 Advanced Hospital Pharmacy Management II

Semester course; 3 lecture hours. 3 credits. The planning and development of a total program in institutional drug use control is stressed with emphasis on modern human and fiscal resource management theories and applications. Current management problems unique to institutional pharmacy practice are stressed.

### PHAR 635 Advanced Pharmacotherapeutics and Adverse Drug Reactions I

Semester course; 3 lecture and 6 laboratory hours. 5 credits. The rational therapeutic choices of drugs with respect to pathophysiological considerations of diseases are emphasized. Clinical application of biophar-

maceutics, pharmacokinetics, therapeutics, drug interactions, adverse drug reactions, laboratory findings, and other factors affecting drug efficacy in the context of the total care of the patient is stressed. Detection, clinical evaluation and management of adverse drug reactions is also emphasized. Students receive advanced instruction in therapeutics and pathophysiology and learn to apply drug knowledge to problem solving using selected patient cases. (Nontraditional program)

### PHAR 636 Advanced Pharmacotherapeutics and Adverse Drug Reactions II

Semester course; 3 lecture and 6 laboratory hours. 5 credits. A continuation of PHAR 635. (Nontraditional program)

### PHAR 637 Introduction to Research Methods in Pharmaceutical Sciences

Semester course; 3 lecture hours. 3 credits.  
Prerequisite: Permission of instructor. Assists practicing pharmacist managers and researchers in the development, implementation, monitoring and evaluation of programs for the delivery of pharmaceutical care and the practice of pharmacy. Introduces students to the empirical method and to provide them with a fundamental knowledge base for developing salient research questions that could lead to the articulation of testable research hypotheses, accomplished by addressing those research techniques and designs most commonly used in pharmacy and health services research.

### PHAR 638 Pharmaceutical Benefit Management

Semester course; 3 lecture hours. 3 credits. Offered: I. Prerequisite: Permission of instructor. Addresses the need for pharmacy benefit management, the types of organizations that use pharmacy benefit management and the primary tools, techniques and practices used to manage the pharmacy benefit. Presents through lectures, readings, class discussions and a research paper.

### PHAR 643 Pharmacotherapy I

Semester course; 3 lecture and 0.5 conference hours. 3.5 credits. Offered: I. The pathophysiology, clinical presentation, clinical course, prevention, and pharmacotherapy of disease states are presented. The detection of drug-related problems in the provision of pharmaceutical care using problems or patient cases is introduced. Problem-solving and communication skills are enhanced in small group conferences.

### PHAR 644 Pharmacotherapy II

Semester course; 4 lecture and 0.5 conference hours. 4.5 credits. Offered: II as a continuation of PHAR 643. The pathophysiology, clinical presentation, clinical course, prevention, and pharmacotherapy of disease states are presented. Clinical pharmacology, applied clinical pharmacokinetics, techniques for assessing drug-related problems, monitoring and optimizing pharmacotherapy using subjective and objective patient data are emphasized. Large group discussions are introduced. Problem-solving and communication skills are enhanced in small group conferences.

### PHAR 650 Drug Literature Evaluation

Semester course; 2 lecture and 2 laboratory hours. 3 credits. A study, at the advanced-level, of the techniques used to retrieve and evaluate clinical drug literature. Research methods and research design are taught to better prepare the student to evaluate published research. (Nontraditional program)

**PHAR 657, 658 Pharmacy Practicum III, IV**

Semester courses; 6 conference hours, 14 experiential hours per semester. .5 credit. Offered: I, II. This course focuses on the skills needed to solve problems and deliver pharmaceutical care. Skills taught in other courses and laboratory sessions will be reinforced and refined in the experience component of this course. Graded as honors or pass/fail.

**PHAR 670 Geriatric Pharmacotherapy**

In this course, students will learn the sociobehavioral and therapeutic aspects of providing health care to elderly people. Problems associated with drug use in the elderly and the importance of providing quality pharmaceutical care to ambulatory and institutionalized geriatric individuals will be emphasized.

**PHAR 671 Applied Pharmacoeconomics and Outcomes Research**

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Presents theoretical and practical topics relating to pharmacoeconomics and health outcomes research. Students will learn to critically appraise and discuss pharmaceutical outcomes research through lectures, readings, class participation and projects. Requires students to plan, initiate and present an outcomes research project that considers both clinical and economic issues of product or service selection.

**PHAR 672 Advances in Mental Health Pharmacy Practice**

Semester course; 1 lecture and 3 clinical hours. 2 credits. Students choose the topics for discussion in this elective course. They actively learn through small group discussions of the pharmacotherapy of psychiatric disorders. Students gain experience in patient rounds, practice-based projects, interpretation of clinical practice guidelines, use of the Internet and computer presentations.

**PHAR 673 Advanced Oncology Therapeutics**

This course builds upon material learned in Pharmacotherapy and Drug Literature Evaluation. Didactic lectures include topics such as advanced pharmacology concepts of antineoplastic agents, treatment strategies and controversies for various malignancies, the role of stem cell and bone marrow transplantation, treatment of oncology emergencies and the role of the pharmacist in cancer screening, treatment and palliative care. The experiential activities include patient care experiences and projects for cancer-related service organizations.

**PHAR 674 Advances in Community Pharmacy Practice and Therapeutics**

Semester course; 2 lecture and 1 conference hour. 3 credits. Offered: I. This course will enable students to enhance their community practice and patient care skills. It will address strategies for marketing and documentation of clinical services including disease management, wellness and screening programs pertinent to community pharmacy practice. Students will visit community pharmacies for the practice component of this course.

**PHAR 675 The Pharmacist's Role in Alternative Medicine**

Semester course; 3 lecture hours. 3 credits. Offered: I. With the expanding use of natural products and other alternative medicine modalities, the pharmacist is confronted with a need to be knowledgeable of these

areas so that he or she may more effectively provide guidance to patients. This course is a study of commonly used natural products and other alternative therapies (e.g., homeotherapy, healing touch, osteopathic medicine).

**PHAR 676 Veterinary Pharmacotherapy**

Semester course; 2 lecture hours. 2 credits. Offered: I. This course explores the unique aspects of drug action in nonhuman species and treatment of common veterinary problems.

**PHAR 677 Infectious Diseases Pharmacotherapy**

Semester course; 2 lecture hours. 2 credits. This course is designed to familiarize the student with the important aspects of the rational treatment of human infectious diseases. Emphasis will be placed on the pharmacology, toxicology and pharmacokinetics/pharmacodynamics of antimicrobial agents; the methods of obtaining and evaluating culture and sensitivities; and familiarity with infectious diseases literature. Students will attend daily consultation rounds with the infectious diseases service and will meet with the preceptor to discuss patients and plan for contributions to patient infectious diseases service and will meet with the preceptor to discuss patients and plan for contributions to patient care.

**PHAR 678 Women's Health: Pharmacotherapeutic Issues and Controversies**

Semester course; 3 lecture hours. 3 credits. This course addresses the prevention and management of disease in women. It is designed to expand upon the women's health topics presented in the pharmacotherapy course series. Problem-based learning, student presentations and clinical projects serve as the primary teaching methods.

**PHAR 679 Topics in Critical Care Pharmacotherapy**

Semester course; 2 lecture and 3 conference hours. 3 credits. This course consists of discussions and case presentations to familiarize the student with critical care pharmacotherapy. In addition to a discussion of various disease states, information will be provided about the critically ill patient, the environment of the intensive care unit and the role of the critical care pharmacist. The course is presented in an interactive case-based discussion format.

**PHAR 690 Pharmacy Research Seminar**

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy. Research seminar.

**PHAR 691 Special Topics in Pharmacy**

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

**PHAR 697 Directed Research in Pharmacy**

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

**PHAR 701 Pharmacy Ethics**

Semester course; 1.5 lecture and average of 1 conference hour per week. 2 credits. Offered: I. This course includes an overview of basic ethical principles and relates them to the practice of pharmacy. It introduces different perspectives on approaches to addressing

ethical dilemmas in pharmacy practice and presents the tools for decision making.

**PHAR 718 Pharmacy Skills Laboratory IV**

Semester course; 3 laboratory hours. 1 credit. Offered: II. This competency-based course challenges students in selected clinical applications in pharmacy practice.

**PHAR 724 Pharmacy Law**

Semester course; 3 lecture hours. 3 credits. Offered: II. A study of federal and state laws, including statutes, regulations and cases, affecting the practice of pharmacy and the distribution of drugs. This course includes material on ethics.

**PHAR 743 Pharmacotherapy III**

Semester course; 2.5 lecture and 0.5 conference hours. 3 credits. Offered: I. The pathophysiology, clinical presentation, clinical course, prevention and treatment of disease states are presented. Clinical pharmacology, applied clinical pharmacokinetics, techniques for assessing drug-related problems, and monitoring and optimizing pharmacotherapy are emphasized. Problem-solving and communication skills are enhanced in small group conferences.

**PHAR 744 Integrated Therapeutics**

Semester course; 2 lecture and 2 conference hours. 3 credits. Offered: II. Patient cases serve as the basis for active student learning of the pathophysiology, clinical presentation, clinical course, prevention, and pharmacotherapy of disease states. The rational therapeutic choice of drugs with respect to multiple disease states is emphasized. Collection of patient data, assessment of drug-related problems, development of recommendations, and establishment of monitoring parameters are emphasized. Clinical application of pharmacology, biopharmaceutics, pharmacokinetics, therapeutics, drug interactions, adverse drug reactions, laboratory findings, and other factors affecting drug efficacy in the context of disease state management are also stressed. Student participation in large and small group discussions is an essential component of this course.

**PHAR 745 Drug Literature Evaluation I**

Semester course; 4 lecture hours. 4 credits. Offered: I. This course in the evaluation drug literature contains material related to biostatistics. Lecture topics include research design, concepts and principles of clinical trials, evaluation of case reports and primary literature, appropriate use of statistics, and inferential statistics (parametric and nonparametric). Exercises include efficient use of drug information resources, critique of pharmaceutical advertising, and development of professional written communication skills.

**PHAR 747 Physical Assessment**

Semester course; 1 lecture hour per week. 1 credit. Offered: I. A study of basic physical assessment through lectures, audiovisual aids, readings, and hands-on practice. Emphasis is placed on patient interviewing techniques, physical examination skills, and the application of these skills to evaluating drug therapy and achieving desired therapeutic goals.

**PHAR 748 Self-Medication Awareness and Community Health**

Semester course; 2.5 lecture and an average of 1 conference hour per week. 3 credits. Offered: II. This course describes and utilizes skills for assessing the necessity of using nonprescription therapy, including alternative medicines, for the medical problems

encountered. Problem solving, hands-on workshops to learn about home-monitoring, case presentation, and didactic lectures will all be used to conduct the course. The course includes material related to everyday prevention of disease and evaluation of patient data.

#### **PHAR 757, 758 Pharmacy Practicum V, VI**

Semester courses; 6 conference hours, 14 experiential hours per semester. 0.5 credit. Offered: I, II. Students will learn to integrate the patient care skills learned in PHAR 657-658 into the pharmaceutical care services provided to assigned patients in hospital and ambulatory settings. Students identify drug-related problems, develop and execute patient care plans to address these problems, monitor and interpret the results of these plans and document services in health records. Graded as honors or pass/fail.

#### **PHAR 760 Acute Care Rotation**

Semester course; daily for 5 weeks. 5 credits. Offered: I, II, S. In this course, students will participate in the delivery of pharmaceutical care to hospitalized patients with an ongoing clinical pharmacy program. Students may participate in adult medicine, family practice or specialty medicine. Students will participate in the following types of activities: rounding, obtaining patient histories, identifying problems requiring therapeutic interventions, solving problems, consulting with physicians, monitoring patient outcomes and providing educational sessions for the professional staff. These services are expected to be integrated with the continuum of hospital pharmacy services.

#### **PHAR 761 Institutional Practice Rotation**

Semester course; daily for 5 weeks. 5 credits. Offered: I, II, S. In this course, students will participate in the

hospital pharmacy department's delivery of pharmacy services including drug preparation, dispensing, drug distribution, administration and quality assurance. Students will participate in dosage form development, IV admixtures, unit dose dispensing, documentation, quality assurance and related services.

#### **PHAR 762 Geriatrics Rotation**

Semester course; daily for 5 weeks. 5 credits. Offered: I, II, S. In this course, students will participate in the delivery of care and services to patients residing in resident halls, adult homes and/or nursing homes. Student activities will include drug preparation and distribution as well as the consultant activities that include drug monitoring and review of patient care.

#### **PHAR 763 Ambulatory Care Rotation**

Semester course; daily for 5 weeks. 5 credits. Offered: I, II, S. In this course, students will participate in the delivery of pharmaceutical care in a primary care, multidisciplinary practice in which there is an ongoing clinical pharmacy program. These sites may include community pharmacies, hospital clinics, physician group practices, and managed care facilities. Students will be involved in obtaining patient histories, evaluating drug therapies, assessing patient's response to therapy, identifying drug related problems, developing pharmacy care plans, monitoring the patient's therapeutic outcome, consulting with physician and nonphysician providers and providing patient education. If this site offers dispensing services, the student will be involved with drug delivery to the patient.

#### **PHAR 764 Community Practice Rotation**

Semester course; daily for 5 weeks. 5 credits. Offered: I, II, S. In this course, students will participate in all

facets of pharmacy practice in the community pharmacy setting. Students will be involved in dispensing, compounding, telephone consultation, patient counseling and nonprescription drug recommendations. Students will also be involved in patient assessment, monitoring intervention and follow-up care designed to improve the outcomes of drug therapy.

#### **PHAR 765, 766, 767 Elective Rotation I, II, III**

Semester course; daily for 5 weeks. 5 credits. Offered: I, II, S. In this course, students will be able to participate in a variety of pharmacy practice settings.

### **Basic health sciences**

Basic health sciences courses are included in the pharmacy curriculum. See the School of Medicine chapters of this bulletin for details on the following courses and faculty.

Anatomy (ANAT 505)  
 Biochemistry and Molecular Biophysics (BIOC 523, 524)  
 Microbiology and Immunology (MICR 501)  
 Pharmacology and Toxicology (PHTX 603, 604)  
 Physiology (PHIS 506)





# Appendices

The following appendices represent the most current, accurate information available at the time of publication; however, it is reasonable to expect changes to be made (during the academic year) with respect to this information without prior notice. Refer to the Web at <http://www.vcu.edu> for the most current information.

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# Board of Visitors and University Administration

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## Board of Visitors

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### Appointed by the Governor of Virginia

**The Honorable Ralph L. Axselle Jr.**  
Richmond

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Fairfax

**Edward H. Bersoff**  
McLean

**Stephen P. Long**  
Richmond

**Steven A. Markel**  
Glen Allen

**Laura R. McMichael**  
Richmond

**W. Baxter Perkinson Jr., Rector**  
Richmond

**The Honorable Anne P. Petera**  
Richmond

**Monty W. Plymale**  
Roanoke

**Harold Y. Pyon**  
Fairfax Station

**E. Janet Riddick**  
Highland Springs

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Richmond

**Michele A. Romano**  
Fairfax Station

**Thomas G. Rosenthal**  
Richmond

**The Honorable G. Bryan Slater**  
Richmond

**Philip Thompson Sr.**  
Chesterfield

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## University administration

---

**Eugene P. Trani, B.A., M.A., Ph.D.**  
President

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Vice Provost for Academic Administration

**Donna R. Brodd, B.S., M.S., M.P.H., Ph.D.**  
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Vice President for Government and Community  
Relations for VCU and the VCU Health System

**Thomas F. Huff, B.S., Ph.D.**  
Vice Provost for Life Sciences

**Hermes A. Kontos, M.D., Ph.D.**  
Vice President for Health Sciences and CEO, VCU  
Health System

**Roderick J. McDavis Jr., B.S., M.S., Ph.D.**  
Provost and Vice President for Academic Affairs

**Sue Ann Messmer, B.A., M.A.**  
Vice President for University Outreach

**Sheldon Retchin, M.D., M.S.P.H.**  
Senior Executive Vice President and CEO,  
VCU Health System

**Henry G. Rhone, B.A., M.Ed., Ed.D.**  
Vice Provost for Student Affairs

**Phyllis C. Self, B.S., M.S., Ph.D.**  
Vice Provost for Academic Technology

**Paul W. Timmreck, A.B.Ed., M.P.A.**  
Senior Vice President for Finance and  
Administration

**Marsha R. Torr, Ph.D.**  
Vice President for Research

**Peter L. Wyeth, B.A., M.Ed.**  
Vice President for Advancement

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## Academic deans

---

### College of Humanities and Sciences

**Stephen D. Gottfredson**  
Dean (1997)  
B.A. 1971 University of Oregon  
M.A. 1977 Johns Hopkins University  
Ph.D. 1977 Johns Hopkins University

**Albert T. Sneden**  
Senior Associate Dean and Professor of  
Chemistry (1977)  
B.S. 1968 Carnegie Mellon University  
Ph.D. 1975 Brandeis University

**John H. Borgard**  
Associate Dean and Associate Professor (1971)  
A.B. 1960 Marquette University  
M.Ed. 1964 Marquette University  
Ph.D. 1974 Loyola University, Chicago

**Laura J. Moriarty**  
Assistant Dean and Associate Professor of  
Criminal Justice (1993)  
B.C.J. 1984 Louisiana State University  
M.S. 1985 Louisiana State University  
Ph.D. 1988 Sam Houston State University

### School of Allied Health Professions

**Cecil B. Drain**  
Professor and Dean (1993)  
B.S.N. 1976 University of Arizona  
M.S. 1980 University of Arizona  
Ph.D. 1986 Texas A & M University

**Dolores G. Clement**  
Professor and Associate Dean (1988)  
B.A. 1970 Mount Saint Joseph  
M.A. 1979 Ohio State University  
M.S. 1981 Rush University  
Dr.P.H. 1988 University of California, Berkeley

**Debra A. Ropelewski**  
Assistant Dean (1983)  
B.S. 1982 Virginia Polytechnic Institute and State  
University  
M.B.A. 1988 Virginia Commonwealth University

## School of the Arts

### Richard E. Toscan

Dean and Professor of Theatre (1996)  
B.A. 1963 Purdue University  
M.A. 1964 University of Illinois, Urbana-Champaign  
Ph.D. 1970 University of Illinois, Urbana-Champaign

### Michael H. Drought

Associate Dean for Academic Affairs and Associate Professor of Painting and Printmaking (1975)  
B.S. University of Wisconsin, Madison  
M.F.A. 1973 University of Wisconsin, Madison

### Joseph H. Seipel

Associate Dean for Academic Affairs and Director, Graduate Studies, Professor of Sculpture (1974)  
B.S. University of Wisconsin, Madison  
M.F.A. 1973 Maryland Institute College of Art, Rinehart School of Sculpture

### John T. Bryan

Associate Dean for Sponsored Research and Development and Assistant Professor of Art (1981)  
B.S. Davidson College  
M.A. George Peabody College  
M.F.A. 1975 City College of New York

### Susan Roth

Assistant Dean for Academic Affairs  
B.F.A. Cooper Union for the Advancement of Science and Art, New York  
M.A. The Ohio State University

### Nancy M. Scott

Associate Dean for Academic Administration and Assistant Professor of Fashion Design and Merchandising (1992)  
B.F.A. Virginia Commonwealth University  
M.Ed. 1996 Virginia Commonwealth University

## School of Business

### Michael Sesnowitz

Dean and Professor of Economics (2000)  
B.A. Brooklyn College of The City University of New York  
M.A. Brooklyn College of The City University of New York  
Ph.D. 1971 University of Pittsburgh

### E. G. Miller

Senior Associate Dean and Associate Professor of Insurance and Management Science (1973)  
B.S. University of Alabama  
M.A. University of Alabama  
Ph.D. 1976 University of Alabama  
C.L.U.; C.P.C.U.

### Walter S. Griggs Jr.

Associate Dean for Undergraduate Studies and Associate Professor of Business Law. (1971)  
M.H. University of Richmond  
J.D. University of Richmond  
Ed.D. 1979 The College of William and Mary

### Charles J. Gallagher

Associate Dean for External Affairs and Associate Professor of Economics (1971)  
B.S. Rider College  
Ph.D. 1971 West Virginia University

### Allen S. Lee

Associate Dean for Research and Graduate Studies and Professor of Information Systems (1998)  
B.S. Cornell University  
M.S. University of California, Berkeley  
Ph.D. 1982 Massachusetts Institute of Technology

## School of Dentistry

### Ronald J. Hunt

Harry Lyons Professor and Dean (1998)  
D.D.S. 1973 University of Iowa  
M.S. 1982 University of Iowa

### James H. Revere Jr.

Assistant Dean, Admissions  
B.A. 1961 University of Richmond  
D.D.S. 1965 Medical College of Virginia

### Carolyn Booker

Assistant Dean for Students  
B.S. 1976 South Carolina State University  
M.A. 1977 South Carolina State University  
Ph.D. 1987 Southern Illinois University

### Betsy A. Hagan

Senior Associate Dean  
B.S. 1974 Virginia Polytechnic Institute and State University  
D.D.S. 1978 Virginia Commonwealth University  
M.B.A. 1984 Virginia Commonwealth University

### James E. Hardigan

Associate Professor and Dean for Administration (1975)  
B.S. 1968 Northeastern University  
M.B.A. 1970 Northeastern University  
Ph.D. 1975 Cornell University

### David C. Sarrett

Professor of General Practice and Assistant Dean for Academics (2000)  
D.M.D. 1977 University of Florida  
M.S. 1988 University of Florida

### Harvey A. Schenkein

Paul Tucker Goad Professor of Periodontics and Microbiology and Immunology and Assistant Dean for Research (1978)  
B.A. 1970 State University of New York

D.D.S. 1974 State University of New York  
Ph.D. 1978 State University of New York

## School of Education

### William C. Bosher Jr.

Dean and Professor of Education and Public Policy (1998)  
B.A. University of Richmond  
M.Ed. Virginia Commonwealth University  
Ed.D. University of Virginia

### Michael D. Davis

Senior Associate Dean for Academic Affairs (1979)  
B.S. Buffalo State College  
M.Ed. University of Buffalo  
Ph.D. University of Illinois

### Diane J. Simon

Associate Dean for Student Affairs (1988)  
B.S. Hampton University  
M.S. New York University  
Ph.D. New York University

### Beverly J. Warren

Associate Dean for Faculty Affairs (2000)  
B.S. University of North Carolina at Greensboro  
M.S. Southern Illinois University  
Ed.D. University of Alabama  
Ph.D. Auburn University

### Gary W. Sarkozi

Director, School of Education Associates (1999)  
B.A. Mary Baldwin College  
M.Ed. University of Virginia  
Ph.D. Virginia Commonwealth University

## School of Engineering

### Robert J. Mattauch

Dean and Commonwealth Professor of Electrical Engineering (1996)  
B.S. 1962 Carnegie Institute of Technology  
M.E. 1963 North Carolina State University  
Ph.D. 1967 North Carolina State University

### Barton B. Cregger

Associate Dean (1999) and Assistant Professor of Electrical Engineering (1998)  
B.S. 1980 University of Virginia  
M.S. 1982 University of Virginia

### Nancy Neville

Assistant Dean for Student Recruiting (1999)  
B.A. 1975 Lehman College of the City University of New York  
M.S. 1999 Rochester Institute of Technology

### L. Thomas Overby

Assistant Dean for Graduate Affairs and Associate Program Chair, Mechanical Engineering (1981)  
B.S. 1961 Virginia Polytechnic Institute and State University

M.Eng. 1966 Pennsylvania State University  
Ph.D. 1974 Virginia Polytechnic Institute and State University

#### **Sohi Rastegar**

Assistant Dean for Research  
B.S. 1980 University of Texas – Austin  
M.S. 1982 University of Texas – Austin  
Ph.D. 1987 University of Texas – Austin

#### **Susan F. Younce**

Assistant Dean for Administration and Finance and Assistant Professor of Engineering (1981)  
B.A. 1974 University of Richmond  
M.S. 1991 Virginia Commonwealth University  
B.A. 1974 University of Richmond  
M.S. 1991 Virginia Commonwealth University

### **School of Graduate Studies**

#### **F. Douglas Boudinot**

Dean, School of Graduate Studies,  
Professor of Pharmaceutics (2002)  
B.S. 1978 Springfield College  
Ph.D. 1985 State University of New York in Buffalo

#### **Sherry T. Sandkam**

Associate Dean, School of Graduate Studies, and Assistant Professor, Division of Educational Studies, School of Education (1996)  
B.A. 1970 Longwood College  
M.B.A. 1986 Virginia Commonwealth University  
Ph.D. 1996 Virginia Commonwealth University

### **School of Medicine**

#### **Heber H. Newsome**

Dean and Professor of Surgery (1970)  
B.S. 1958 Wake Forest University  
M.S. 1962 Tulane University  
M.D. 1962 Tulane University

#### **Russell P. Seneca**

Professor and Associate for Medical Education (2002)  
VCU School of Medicine – Inova Campus  
A.B. 1963 Providence College  
M.D. 1967 Georgetown University

#### **Jan F. Chlebowski**

Associate Dean for Graduate Education and Professor of Biochemistry (1979)  
B.A. 1965 St. Mary's College  
Ph.D. 1969 Case Western Reserve University

#### **Ralph R. Clark III**

Associate Dean for Clinical Activities and Assistant Professor of Internal Medicine (1990)  
B.S. 1983 The College of William and Mary  
M.D. 1987 Virginia Commonwealth University

#### **George D. Ford**

Assistant Dean for Sponsored Programs and Professor of Physiology (1969)  
B.S. 1961 West Virginia University  
Ph.D. 1967 West Virginia University

#### **William M. Gleason**

Associate Vice-President for Health Sciences/Financial Affairs and Senior Associate Dean for Finance and Administration and Assistant Professor (1980)  
A.B. 1969 University of North Carolina, Chapel Hill  
M.B.A. 1973 Indiana University

#### **Carol L. Hampton**

Associate Dean for Faculty and Instructional Development and Associate Professor (1987)  
B.A. 1965 University of Arkansas  
M.M.S. 1969 Tulane University

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Associate Dean for Admissions and Assistant Professor (1986)  
B.A. 1965 Brown University  
M.A. 1983 West Virginia College  
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#### **Sheldon Markowitz**

Associate Dean for Veterans Services (1975)  
M.S. 1978 Virginia Commonwealth University  
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#### **Paul E. Mazmanian**

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B.S. 1972 Wayne State University  
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Ph.D. 1979 University of Michigan

#### **James M. Messmer**

Associate Dean for Medical Education and Associate Professor of Radiology (1981)  
B.A. 1968 Rockhurst College  
M.D. 1972 St. Louis University  
M.A. 1995 Virginia Commonwealth University

#### **Mary D. Nettleman**

Associate Dean for Primary Care and Professor of Internal Medicine (1996)  
B.S. 1977 Ohio University  
M.D. 1981 Vanderbilt University  
M.S. 1993 University of Iowa

#### **Robert P. Perry**

Associate Dean for Graduate Medical Education and Associate Professor of Internal Medicine (1979)  
A.B. 1972 Harvard University  
M.D. 1976 University of Rochester

#### **Hugo R. Seibel**

Associate Dean for Student Activities and Professor of Anatomy and Neurobiology (1967)  
B.S. 1960 Brooklyn College  
Ph.D. 1967 University of Rochester

#### **Craig E. Cheifetz**

Assistant Professor and Assistant Dean for Medical Education (2002)  
VCU School of Medicine – Inova Campus  
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### **School of Nursing**

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Dean (1991)  
B.S.N. 1966 University of Arkansas  
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Ph.D. 1977 Georgia State University

#### **Inez Tuck**

Associate Dean of Doctoral Program and Research Associate Professor (1999)  
B.S.N. 1970 A&T State University, N.C.  
M.N. 1972 University of Florida, Gainesville  
Ph.D. 1980 University of North Carolina, Greensboro  
M.B.A. 1995 University of Tennessee, Knoxville

#### **Janet B. Younger**

Associate Dean for Master's and Undergraduate Programs and Professor (1984)  
B.S. 1967 Medical College of Virginia  
M.Ed. 1970 University of Virginia  
M.S. 1972 Virginia Commonwealth University  
Ph.D. 1984 University of Virginia

#### **Anthony J. DeLellis**

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B.A. 1970 University of Delaware  
M.A. 1973 Central Michigan University  
Ed.D. 1977 University of Virginia

### **School of Pharmacy**

#### **Victor A. Yanchick**

Dean and Professor (1996)  
B.S. 1962 University of Iowa  
M.S. 1966 University of Iowa  
Ph.D. 1968 Purdue University

#### **Thomas P. Reinders**

Associate Dean for Admissions and Student Services and Associate Professor (1974)  
B.S. 1970 University of Cincinnati  
Pharm.D. 1972 University of Cincinnati

#### **William E. Smith**

Associate Dean for Administrative Affairs and Associate Professor (1997)  
Pharm.D. 1965 University of California  
M.P.H. 1976 University of California  
Ph.D. 1994 Auburn University

**Andrew L. Wilson**

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B.S. 1976 University of Connecticut  
Pharm.D. 1978 Wayne State University

**School of Social Work**

**Frank R. Baskind**

Dean and Professor of Social Work (1992)  
A.B. 1967 Fordham University  
M.S.W. 1971 University of Connecticut  
Ph.D. 1978 University of Connecticut

**Ann M. Nichols-Casebolt**

Associate Dean, Director of the Ph.D. Program  
and Professor of Social Work (1993)  
B.A. 1971 University of Wisconsin  
M.S.S.W. 1978 University of Wisconsin  
Ph.D. 1984 University of Wisconsin

# Determination of Student Classification for In-state Tuition Purposes

Section 23-7.4, of the Code of Virginia, governs eligibility for in-state tuition. Effective for students enrolling on or after July 1, 1996, the statute provides:

**§ 23-7.4. Eligibility for in-state tuition charges.** – A. For purposes of this section and §§ 23-7.4:1, 23-7.4:2 and 23-7.4:3, the following definitions shall apply:

“Date of the alleged entitlement” means the first official day of class within the term, semester or quarter of the student’s program.

“Dependent student” means one who is listed as a dependent on the federal or state income tax return of his parents or legal guardian or who receives substantial financial support from his spouse, parents or legal guardian. It shall be presumed that a student under the age of twenty-four on the date of the alleged entitlement receives substantial financial support from his parents or legal guardian, and therefore is dependent on his parents or legal guardian, unless the student (i) is a veteran or an active duty member of the U.S. Armed Forces; (ii) is a graduate or professional student; (iii) is married; (iv) is a ward of the court or was a ward of the court until age 18; (v) has no adoptive or legal guardian when both parents are deceased; (vi) has legal dependents other than a spouse; or (vii) is able to present clear and convincing evidence that he is financially self-sufficient.

“Domicile” means the present, fixed home of an individual to which he returns following temporary absences and at which he intends to stay indefinitely. No individual may have more than one domicile at a time. Domicile, once established, shall not be affected by mere transient or temporary physical presence in another jurisdiction.

“Domiciliary intent” means present intent to remain indefinitely.

“Emancipated minor” means a student under the age of eighteen on the date of the alleged entitlement whose parents or guardians have surrendered the right to his care, custody and earnings and who no longer claim him as a dependent for tax purposes.

“Full-time employment” means employment resulting in, at least, an annual earned income reported for tax purposes equivalent to fifty work weeks of forty hours at minimum wage.

“Independent student” means one whose parents have surrendered the right to his care, custody and earnings, do not claim him as a dependent on federal or state income tax returns, and have ceased to provide him substantial financial support.

“Special arrangement contract” means a contract between a Virginia employer or the authorities controlling a federal installation or agency located in Virginia and a public institution of higher education for reduced rate tuition charges as described § 23-7.4:2 G.

“Substantial financial support” means financial support in an amount which equals or exceeds that required to qualify the individual to be listed as a dependent on federal and state income tax returns.

“Unemancipated minor” means a student under the age of eighteen on the date of the alleged entitlement who is under the legal control of and is financially supported by either of his parents, legal guardian or other person having legal custody.

“Virginia employer” means any employing unit organized under the laws of Virginia or having income from Virginia sources regardless of its organizational structure, or any public or nonprofit organization authorized to operate in Virginia.

B. To become eligible for in-state tuition, an independent student shall establish by clear and convincing evidence that for a period of at least one year immediately prior to the date of the alleged entitlement, he was domiciled in Virginia and had abandoned any previous domicile, if such existed.

To become eligible for in-state tuition, a dependent student or unemancipated minor shall establish by clear and convincing evidence that for a period of at least one year prior to the date of the alleged entitlement, the person through whom he claims eligibility was domiciled in Virginia and had abandoned any previous domicile, if such existed. If the person through whom the dependent student or unemancipated minor established such domicile and eligibility for in-state tuition abandons his Virginia domicile, the dependent student or unemancipated minor shall be entitled to such in-state tuition for one year from the date of such abandonment.

In determining domiciliary intent, all of the following applicable factors shall be con-

sidered: continuous residence for at least one year prior to the date of alleged entitlement, state to which income taxes are filed or paid, driver’s license, motor vehicle registration, voter registration, employment, property ownership, sources of financial support, military records, a written offer and acceptance of employment following graduation, and any other social or economic relationships with the Commonwealth and other jurisdictions.

Domiciliary status shall not ordinarily be conferred by the performance of acts which are auxiliary to fulfilling educational objectives or are required or routinely performed by temporary residents of the Commonwealth. Mere physical presence or residence primarily for educational purposes shall not confer domiciliary status. A matriculating student who has entered an institution and is classified as an out-of-state student shall be required to rebut by clear and convincing evidence the presumption that he is in the Commonwealth for the purpose of attending school and not as a bona fide domiciliary.

Those factors presented in support of entitlement to in-state tuition shall have existed for the one-year period prior to the date of the alleged entitlement. However, in determining the domiciliary intent of active duty military personnel residing in the Commonwealth, or the domiciliary intent of their dependent spouse or children who claim domicile through them, who voluntarily elect to establish Virginia as their permanent residence for domiciliary purposes, the requirement of one year shall be waived if all other conditions for establishing domicile are satisfied.

C. A married person may establish domicile in the same manner as an unmarried person.

An emancipated minor may establish domicile in the same manner as any other independent student. A nonmilitary student whose parent or spouse is a member of the armed forces may establish domicile in the same manner as any other student.

Any alien holding an immigration visa or classified as a political refugee shall also establish eligibility for in-state tuition in the same manner as any other student. However, absent congressional intent to the contrary, any person holding a student or other temporary visa shall not have the capacity to intend to remain in Virginia indefinitely and, therefore, shall be

ineligible for Virginia domicile and for in-state tuition charges.

The domicile of a dependent student shall be rebuttably presumed to be the domicile of the parent or legal guardian claiming him as an exemption on federal or state income tax returns currently and for the tax year prior to the date of the alleged entitlement or providing him substantial financial support.

For the purposes of this section, the domicile of an unemancipated minor or a dependent student eighteen years of age or older may be either the domicile of the parent with whom he resides, the parent who claims the student as a dependent for federal and Virginia income tax purposes for the tax year prior to the date of the alleged entitlement and is currently so claiming the student, or the parent who provides the student substantial financial support. If there is no surviving parent or the whereabouts of the parents are unknown, then the domicile of an unemancipated minor shall be the domicile of the legal guardian of such unemancipated minor unless there are circumstances indicating that such guardianship was created primarily for the purpose of conferring a Virginia domicile on the unemancipated minor.

D. It is incumbent on the student to apply for change in domiciliary status on becoming eligible for such change. Changes in domiciliary status shall only be granted prospectively from the date such application is received.

A student who knowingly provides erroneous information in an attempt to evade payment of out-of-state fees shall be charged out-of-state tuition fees for each term, semester or quarter attended and may be subject to dismissal from the institution. All disputes related to the veracity of information provided to establish Virginia domicile shall be appealable through the due process procedure required by § 23-7.4:3. (1984, c. 422; 1985, cc. 179, 572; 1988, c. 124; 1989, c. 371; 1990, c. 680; 1991, c. 590; 1996, cc. 931, 981; 1999, c. 439.)

**The 1996 amendments.** – The 1996 amendments by cc. 931 and 981 are identical, and rewrote this section.

**§ 23-7.4:1. Waiver of tuition and required fees for certain students.** – A. 1. All sums appropriated by law for the purpose of effecting the provisions of this subsection shall be used for the sole purpose of providing for free tuition and required fees at the state-supported institutions and institutional charges, general or college fees, or any charges by whatever term referred to, board and room rent, and books and sup-

plies at any education or training institution of collegiate or secondary grade in the Commonwealth of Virginia approved in writing by the Director of the Department of Veterans' Affairs for the use and benefit of the children not under sixteen and not over twenty-five years of age either of whose parents was killed in action, is missing in action or a prisoner of war in any armed conflict subsequent to December 6, 1941, while serving in the Army, Navy, Marine Corps, Air Force or Coast Guard of the United States, or was or is or may hereafter become totally and permanently disabled due to service during such periods if such parent (i) was a citizen of Virginia at the time of entering such service; (ii) is and has been, for at least five years immediately prior to the date on which application was submitted by or on behalf of such child for admission to any education or training institution of collegiate or secondary grade in this Commonwealth, a citizen of Virginia; (iii) is deceased, was a citizen of Virginia on the date of his or her death and had been a citizen of Virginia for at least five years immediately prior to his or her death; or (iv) is deceased and the surviving parent had been, at some time previous to marrying the deceased parent, a citizen of Virginia for at least five years and is and has been a citizen of Virginia for at least five years immediately prior to the date on which application was submitted by or on behalf of such child for admission to any education or training institution of collegiate or secondary grade in this Commonwealth.

2. Such children, upon recommendation of the Director of the Department of Veterans' Affairs, shall be admitted to state institutions of secondary or higher education, free of tuition and all required fees. Each state-supported institution shall include in its catalogue or equivalent publication a statement describing the benefits provided by this subsection.

3. The amounts that may be or may become due by reason of attendance at any such educational or training institution, not in excess of the amount specified in subdivision 5, shall be payable on vouchers approved by the Director of the Department of Veterans' Affairs.

4. The Director of the Department of Veterans' Affairs shall determine the eligibility of the children who may make application for the benefits provided for in this subsection and shall satisfy himself of the attendance and satisfactory progress of such children at such institution and of the accuracy of the charge or charges submitted on account of the attendance of any such children at any such institution. However,

neither the Director nor any employee of the Department of Veterans' Affairs shall receive any compensation for such services.

5. To carry out the provisions of this subsection, there may be expended such funds as shall be appropriated for the purpose in the general appropriation acts. However, the maximum amount to be expended for each such child shall not be more, when combined with any federal allowance which may be made for such tuition, charges, fees, rent, books and supplies, than the actual amount of the benefits provided for in this subsection.

6. For the purposes of this subsection, user fees, such as room and board charges, shall not be included in this authorization to waive tuition and fees. However, all required fees, educational and auxiliary, shall be waived along with tuition.

B. Any child between the ages of sixteen and twenty-five whose parent or any person whose spouse has been killed in the line of duty while employed or serving as a law-enforcement officer, firefighter, including a special forest warden designated pursuant to §10.1-1135, member of a rescue squad, sworn law-enforcement officer, special agent of the Department of Alcoholic Beverage Control, state correctional, regional or local jail officer, regional jail or jail farm superintendent, sheriff, deputy sheriff, or member of the Virginia National Guard while such member is serving in the Virginia National Guard or as a member of the United States Armed Forces, shall be entitled to free undergraduate tuition and required fees at any public institution of higher education in Virginia under the following conditions:

1. The chief administrative officer of the Alcoholic Beverage Control Board, emergency medical services agency, law-enforcement agency, or other appropriate agency or the Superintendent of State Police certifies that the deceased parent or spouse was employed or serving as a law-enforcement officer or a firefighter, including a special forest warden pursuant to §10.1-1135, or member of a rescue squad or in any other capacity as specified in this section and was killed in the line of duty while serving or living in the Commonwealth; and

2. The child or spouse shall have been offered admission to a public institution of higher education. Any child or spouse who believes he is eligible shall apply to the public institution of higher education to which he has been admitted for the benefits provided by this subsection. The institution shall determine the eligibility of the applicant for these benefits and shall also ascertain that the recipients are in attendance and are making satisfactory progress. The

amounts payable for tuition and required fees for the applicants shall be waived by the institution accepting the students.

For the purposes of this subsection, user fees, such as room and board charges, shall not be included in this authorization to waive tuition and fees. However, all required fees, educational and auxiliary, shall be waived along with tuition.

C. Senior citizens shall be entitled to free tuition and required fees pursuant to the provisions of Chapter 4.5 (§ 23-38.54 et seq.) of Title 23.

D. Tuition and required fees may be waived for a student from a foreign country enrolled in a public institution of higher education through a student exchange program approved by such institution, provided the number of foreign students does not exceed the number of students paying full tuition and required fees to the institution under the provisions of the exchange program for a given three-year period. (1996, cc. 931, 981; 1998, c. 377; 2001, c. 330.)

**§ 23-7.4:2. Eligibility for in-state or reduced tuition for students not domiciled in Virginia; tuition grants for members of the National Guard of the Commonwealth of Virginia.** – A. A nonmilitary student whose parent or spouse is a member of the armed forces may establish domicile in the same manner as any other student. However, a nonmilitary student, not otherwise eligible for in-state tuition, whose parent or spouse is a member of the military residing in the Commonwealth pursuant to military orders and claiming a state other than Virginia on their State of Legal Residence Certificate, shall be entitled to in-state tuition charges when the following conditions are met: (i) if the student is a child of a member of the armed forces, then the nonmilitary parent shall have, for at least one year immediately prior to the date of alleged entitlement for in-state tuition charges, resided in Virginia, been employed full time and paid individual income taxes to Virginia. Such student shall be eligible for in-state tuition charges only if the nonmilitary parent claims him as a dependent for Virginia and federal income tax purposes, as evidenced by claiming him as a dependent on an individual or joint return; or (ii) if the student is the spouse of a member of the armed forces, then such student shall have, for at least one year immediately prior to the date of alleged entitlement for in-state tuition, resided in Virginia, been employed full time and paid individual income taxes to Virginia; or (iii) if the student is the child or the spouse of a member of the armed forces, then the student shall be entitled to in-state tuition charges for a maximum of one year during the period that the

military parent or spouse is residing in the Commonwealth. Any student whose spouse or parent is a member of the armed forces shall be eligible for in-state tuition charges for so long as the conditions of clauses (i) and (ii) of this subsection continue to be met. Military dependents provided in-state tuition for one year during the period the military parent or spouse is residing in Virginia shall be counted as out-of-state students for admissions, enrollment and tuition and fee revenue policy purposes. **(Note: § 23-7.4:2 (A)(iii) of the code of Virginia which grants one year in-state tuition to the spouse and children of military personnel has been suspended since the 1994-1996 biennium by § 4-2.01(b)(4) of the appropriation act. Military members are not able to receive any benefit outlined in this section until the suspension period ends.)**

B. Students who live outside this Commonwealth and have been employed full time inside Virginia for at least one year immediately prior to the date of the alleged entitlement for in-state tuition shall be eligible for in-state tuition charges if such student has paid Virginia income taxes on all taxable income earned in this Commonwealth for the tax year prior to the date of the alleged entitlement. Students claimed as dependents for federal and Virginia income tax purposes who live outside this Commonwealth shall become eligible for in-state tuition charges if the nonresident parents claiming them as dependents have been employed full time inside Virginia for at least one year immediately prior to the date of the alleged entitlement and paid Virginia income taxes on all taxable income earned in this Commonwealth for the tax year prior to the date of the alleged entitlement. Such students shall continue to be eligible for in-state tuition charges for so long as they or their qualifying parent is employed full time in Virginia, paying Virginia income taxes on all taxable income earned in this Commonwealth and the student is claimed as a dependent for Virginia and federal income tax purposes.

C. Any person who (i) is a member of the National Guard of the Commonwealth of Virginia and has a minimum remaining obligation of two years, (ii) has satisfactorily completed required initial active duty service, (iii) is satisfactorily performing duty in accordance with regulations of the National Guard, and (iv) is enrolled in any state institution of higher education, any private, accredited and nonprofit institution of higher education in the Commonwealth whose primary purpose is to provide collegiate or graduate education and not to provide religious training or theological education, any course or program offered by

any such institution or any public career and technical school shall be eligible for a grant in the amount of the difference between the full cost of tuition and any other educational benefits for which he is eligible as a member of the National Guard. Application for a grant shall be made to the Department of Military Affairs. Grants shall be awarded from funds available for the purpose by such Department.

D. Notwithstanding the provisions of § 23-7.4 or any other provision of the law to the contrary, the governing board of any state institution of higher education or the governing board of the Virginia Community College System may charge the same tuition as is charged to any person domiciled in Virginia pursuant to the provisions of § 23-7.4 to:

1. Any person enrolled in one of the institution's programs designated by the State Council of Higher Education who is domiciled in and is entitled to reduced tuition charges in the institutions of higher learning in any state which is a party to the S.ern Regional Education Compact which has similar reciprocal provisions for persons domiciled in Virginia;

2. Any student from a foreign country who is enrolled in a foreign exchange program approved by the state institution during the same period that an exchange student from the same state institution, who is entitled to in-state tuition pursuant to § 23-7.4, is attending the foreign institution; and

3. Any high school or magnet school student, not otherwise qualified for in-state tuition, who is enrolled in courses specifically designed as part of the high school or magnet school curriculum in a community college for which he may, upon successful completion, receive high school and community college credit pursuant to a dual enrollment agreement between the high school or magnet school and the community college.

E. The governing board of the Virginia Community College System may charge reduced tuition to any person enrolled in one of the System's institutions who lives within a thirty-mile radius of a Virginia institution, is domiciled in, and is entitled to in-state tuition charges in the institutions of higher learning in any state which is contiguous to Virginia and which has similar reciprocal provisions for persons domiciled in Virginia.

F. The advisory board of the University of Virginia's College at Wise and the board of visitors of the University of Virginia may charge reduced tuition to any person enrolled at the University of Virginia's College at Wise who lives within a fifty-mile radius of the University of Virginia's



College at Wise, is domiciled in, and is entitled to in-state tuition charges in the institutions of higher learning in Kentucky, if Kentucky has similar reciprocal provisions for persons domiciled in Virginia.

Any out-of-state students granted in-state tuition pursuant to this subsection and subsection E shall be counted as out-of-state students for the purposes of determining admissions, enrollment, and tuition and fee revenue policies.

G. Public institutions of higher education may enter into special arrangement contracts with Virginia employers or authorities controlling federal installations or agencies located in Virginia. The special arrangement contracts shall be for the purpose of providing reduced rate tuition charges for the employees of the Virginia employers or federal personnel when the employers or federal authorities are assuming the liability for paying, to the extent permitted by federal law, the tuition for the employees or personnel in question and the employees or personnel are classified by the requirements of this section as out-of-state.

Special arrangement contracts with Virginia employers or federal installations or agencies may be for group instruction in facilities provided by the employer or federal authority or in the institution's facilities or on a student-by-student basis for specific employment-related programs.

Special arrangement contracts shall be valid for a period not to exceed two years and shall be reviewed for legal sufficiency by the Office of the Attorney General prior to signing. All rates agreed to by the public institutions shall be at least equal to in-state tuition and shall only be granted by the institution with which the employer or the federal authorities have a valid contract for students for whom the employer or federal authorities are paying the tuition charges.

All special arrangement contracts with authorities controlling federal installations or agencies shall include a specific number of students to be served at reduced rates.

Nothing in this subsection shall change the domiciliary status of any student for the purposes of enrollment reporting or calculating the proportions of general funds and tuition and fees contributed to the cost of education. (1996, cc. 931, 981; 1998, cc. 62, 79; 1999, cc. 424, 437; 2000, c. 196; 2001, c. 483.)

**§ 23-7.4.3. Determinations of eligibility; appeals and guidelines.** – A. Each public institution of higher education shall establish an appeals process for those students who are aggrieved by decisions regarding eligibility for in-state or reduced

tuition charges pursuant to §§ 23-7.4 and 23-7.4.2. The Administrative Process Act (§ 2.2-4000 et seq.) shall not apply to these administrative reviews.

An initial determination shall be made. Each appeals process shall include an intermediate review of the initial determination and a final administrative review. The final administrative decision shall be in writing. A copy of this decision shall be sent to the student. Either the intermediate review or the final administrative review shall be conducted by an appeals committee consisting of an odd number of members. No person who serves at one level of this appeals process shall be eligible to serve at any other level of this review. All such due process procedures shall be in writing and shall include time limitations in order to provide for orderly and timely resolutions of all disputes.

Any party aggrieved by a final administrative decision shall have the right to review in the circuit court for the jurisdiction in which the relevant institution is located. A petition for review of the final administrative decision shall be filed within thirty days of receiving the written decision. In any such action, the institution shall forward the record to the court, whose function shall be only to determine whether the decision reached by the institution could reasonably be said, on the basis of the record, not to be arbitrary, capricious or otherwise contrary to law.

B. To ensure the application of uniform criteria in administering this section and determining eligibility for in-state tuition charges, the State Council of Higher Education shall issue and from time to time revise guidelines, including domiciliary status questions to be incorporated by all state institutions of higher education in their admissions applications. These guidelines shall not be subject to the Administrative Process Act.

An advisory committee, composed of at least ten representatives of institutions of higher education, shall be appointed by the Council each year to cooperate with the Council in developing the guidelines for determining eligibility or revisions thereof. The Council shall consult with the Office of the Attorney General and provide opportunity for public comment prior to issuing any such guidelines. (1996, cc. 931, 981.)

**§ 23-7.4.4. Reduction in tuition and fees charged; in-state undergraduates.** – It is the intent of the General Assembly that the Commonwealth of Virginia make available to its citizens an affordable college education. Therefore, notwithstanding any provision of law to the contrary, the gov-

erning body of each institution of higher education shall reduce the tuition and mandatory educational and general fees in effect on June 30, 1999, for in-state undergraduate students by twenty percent for the year beginning July 1, 1999, and ending June 30, 2000. Following such reduction, the Governor shall include, in each budget submitted to the General Assembly pursuant to § 2.2-1509, sufficient funds to reimburse each public institution of higher education for such tuition and mandatory fees reduced pursuant to this section. (1999, c. 1042.)

**§ 23-7.4.5. Grant for tuition and fees for certain individuals.** – A. The payment of tuition or fees, except fees established for the purpose of paying for course materials, such as laboratory fees, shall be provided for a person who is a bona fide domiciliary of Virginia, as defined in § 23-7.4, and who:

1. Has received a high school diploma or a general educational development (GED) certificate and was in foster care or in the custody of the Department of Social Services or is considered a special needs adoption at the time such diploma or certificate was awarded;

2. Is enrolled or has been accepted for enrollment as a full-time student in a degree or certificate program of at least one academic year in length in a public two-year institution of higher education in the Commonwealth;

3. Has not been enrolled in postsecondary education as a full-time student for more than five years;

4. Maintains the required grade point average established by the State Board for Community Colleges;

5. Has submitted applications for federal student financial aid programs for which he may be eligible; and

6. Meets any additional financial need requirements established by the State Board for Community Colleges for the purposes of such grant.

B. The State Board for Community Colleges, in consultation with the State Council of Higher Education and the Department of Social Services, shall establish regulations governing such grants. The regulations shall include, but shall not be limited to, provisions addressing renewals of grants; financial need; the calculation of grant amounts, after consideration of any additional financial resources or aid the student may hold; the grade point average required to retain such grant; and procedures for the repayment of tuition and fees for failure to meet the requirements imposed by this section. (2000, c. 968.)

# Program Accreditation

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## University accreditation

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Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, master's, doctoral and first professional degrees. SACS is located at 1866 Southern Lane, Decatur, GA 30033; telephone: (404) 679-4500.

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## Academic program accreditation

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### College of Humanities and Sciences

Chemistry (bachelor's degree) – The American Chemical Society  
 Psychology (doctoral degrees: clinical, counseling) – American Psychological Association  
 Public Administration (master's degree) – National Association of Schools of Public Affairs and Administration  
 Urban and Regional Planning (master's degree) – Planning Accreditation Board

### School of Allied Health Professions

Clinical Laboratory Sciences (bachelor's degree) – National Accrediting Agency for Clinical Laboratory Sciences  
 Health Administration (master's and executive master's degrees) – Accrediting Commission on Education for Health Services Administration  
 Nuclear Medicine Technology (bachelor's degree) – Joint Review Committee on Educational Programs in Nuclear Medicine Technology  
 Nurse Anesthesia (master's degree) – Council on Accreditation of Nurse Anesthesia Educational Programs  
 Occupational Therapy (master's degree) – Accreditation Council for Occupational Therapy Education  
 Patient Counseling (certificate) – Association for Clinical Pastoral Education  
 Physical Therapy (Doctorate of Physical Therapy) (D.P.T.) – Commission on Accreditation in Physical Therapy Education  
 Radiation Therapy Technology (bachelor's degree) – Joint Review Committee on Education in Radiologic Technology  
 Radiography (bachelor's degree) – Joint Review Committee on Education in Radiologic Technology  
 Rehabilitation Counseling (master's degree) – Council on Rehabilitation Education

### School of the Arts

Art Education (bachelor's and master's degrees) – National Association of Schools of Art and Design, National Council for Accreditation for Teacher Education, and Virginia State Department of Education

Arts (all visual arts degrees) – National Association of Schools of Art and Design  
 Applied Music (bachelor's and master's degrees) – National Association of Schools of Music  
 Dance/Choreography (bachelor's degree) – National Association of Schools of Dance  
 Interior Design (bachelor's degree) – National Association of Schools of Art and Design/Foundation for Interior Design Education Research  
 Music Composition (master's degree) – National Association of Schools of Music  
 Music Education (bachelor's and master's degrees) – National Association of Schools of Music, National Council for Accreditation for Teacher Education, and Virginia State Department of Education  
 Music History (master's degree) – National Association of Schools of Music  
 Theatre (bachelor's and master's degrees) – National Association of Schools of Theatre  
 Theatre Education (bachelor's degree) – National Association of Schools of Theatre, National Council for Accreditation for Teacher Education, and Virginia State Department of Education

### School of Business

Business and Accounting (all degrees) – AACSB  
 International – Association to Advance Collegiate Schools of Business

### School of Dentistry

Dental Hygiene (bachelor's degree) – Commission on Dental Accreditation  
 Dentistry (D.D.S.) – Commission on Dental Accreditation  
 Advanced Dental Education Programs including Endodontics, Oral and Maxillofacial Surgery, Orthodontics, Pediatric Dentistry, Periodontics, Prosthodontics, and Advanced Education General Dentistry – Commission on Dental Accreditation

### School of Education

Education (all degrees) – National Council of Accreditation for Teacher Education and the Virginia State Department of Education  
 Recreation and Park Management, Therapeutic Recreation (bachelor's degree) – Council on Accreditation National Recreation and Park Association/American for Leisure and Recreation

### School of Engineering

Chemical Engineering (bachelor's degree) – Accreditation Board for Engineering and Technology  
 Electrical Engineering (bachelor's degree) – Accreditation Board for Engineering and Technology  
 Mechanical Engineering (bachelor's degree) – Accreditation Board for Engineering and Technology  
 Computer Science (bachelor's degree) – Accreditation Board for Engineering and Technology

### School of Medicine

Genetic Counseling (master's degree) – American Board of Genetic Counseling  
 Human Genetics (master's and doctoral degrees) – American Board of Medical Genetics  
 Medicine (M.D.) – Liaison Committee on Medical Education  
 Public Health (master's degree) – Council on Education in Public Health

### School of Nursing

Nursing (bachelor's and master's degrees) – National League for Nursing (prelicensure programs) – approved by Virginia Board of Nursing

### School of Pharmacy

Pharmacy (Pharm.D.) – American Council on Pharmaceutical Education

### School of Social Work

Social Work (bachelor's and master's degrees) – Commission on Accreditation of the Council on Social Work Education

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## Specialized program accreditation or certification

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### School of the Arts

Anderson Gallery – National Association of Schools of Art and Design

### Campus Police

Police Academy – Certified by the Virginia Department of Criminal Justice Services

### Division of Student Affairs

University Counseling Services – American Psychological Association  
 Student Health Services – Joint Commission on Accreditation of Health Care Organizations

### Hospitals

VCU Health System – Joint Commission on Accreditation of Health Care Organizations

# Rights of Students Under the Family Educational Rights and Privacy Act

Pursuant to a federal statute enacted to protect the privacy rights of students (Family Educational Rights and Privacy Act of 1974 (FERPA), as amended, enacted as Section 438 of the General Education Provisions Act), eligible students of Virginia Commonwealth University are permitted to inspect and review education records of which the student is the subject. A statement of university policy concerning inspection and disclosure of education records has been formulated in compliance with the federal statute. Copies of the policy also are available from the Office of Records and Registration or on the Web at <http://www.vcu.edu/enroll/rar>.

Generally, the act provides that no personally identifiable information will be

disclosed without the student's consent, except for directory information and information to other school officials with a legitimate educational interest. When personally identifiable information, other than directory information, is disclosed, a record will be maintained of these disclosures. This record also is available for inspection and review by the student.

If an eligible student feels that his or her education record is inaccurate, misleading or otherwise in violation of the student's privacy or other rights, the student may request an amendment to the record.

Should the university fail to comply with the requirements of the act, the student has the right to file a complaint with the Family Policy Compliance Office, U.S. Department of Education, 600 Independence Ave., S.W., Washington, D.C. 20202.

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## Parental Notification Amendment

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Amendments to FERPA signed into federal law in fall 1998 specifically allows notification to the parents or guardians of students under the age of 21, who violate any law or university rule regarding use or possession of alcohol or other controlled substance. The Virginia Attorney General's Task Force on Drinking by College Students also recommended such notification in its 1998 report.

In accordance with these documents, a parental notification procedure has been included in the VCU Drug Free Schools and Workplace Policy.

# School of Graduate Studies

## 2003-04 Graduate Admission Requirements

[www.vcu.edu/graduate](http://www.vcu.edu/graduate)

When completing an application to graduate study, refer to this chart for the type of degree awarded, semesters of entry, application deadline dates, test and other special admission requirements. Transfer to the application the exact titles of curriculum, specialization, track (if applicable) and degree. Applicants are encouraged to contact the school/department sponsoring the intended program of study at the numbers listed in the chart. Other important phone numbers also are provided at the end of this chart.

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semesters of entry	Deadline dates	Test requirements	Special requirements
<b>Accounting</b>	Business (828-4622)	M.Acc.	Fall Spring Summer	Jul 15 Nov 15 Mar 15	GMAT	
<b>Administration and Supervision</b> Administration, Supervision (See Principals and Supervisors)	Educational Studies (828-1332)	M.Ed.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Adult Education and Human Resource Development</b> (See Human Resource Development Certificate)	Educational Studies (828-1332)	M.Ed.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Advertising (M.S., Mass Communications)</b> Indicate specialization: Art Direction, Copywriting or Strategy	Adcenter (828-8384)	M.S.	Fall only			Contact the Adcenter for specific admission requirements
<b>Aging Studies</b>	Gerontology (828-1565)	Certificate	All semesters			
<b>Anatomy</b>	Anatomy and Neurobiology (828-9623) gleichne@hsc.vcu.edu	M.S., Ph.D.	Fall preferred	Applications received prior to Feb 15 given priority consideration	GRE, MCAT or DAT	MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
		Certificate	Fall	No deadline		
<b>Anatomy/Physical Therapy</b>	Anatomy and Neurobiology (828-9623) Physical Therapy (828-0234)	Ph.D.	Fall	May 1	GRE	B.S. or M.S. in Physical Therapy  Contact Physical Therapy or Anatomy for specific admission requirements
<b>Applied Social Research</b>	Sociology (828-1026)	Certificate	Fall	Aug 1		
<b>Art (See Art Education, Art History, Ceramics, Design, Fibers, Fine Arts, Furniture Design, Glassworking, Jewelry/Metalworking, Music, Painting, Printmaking, Sculpture, Theatre and Interdisciplinary Studies Off-campus Arts Program)</b>						
<b>Art Education</b>	Art Education (828-1996)	M.A.E.	Fall Spring Summer	Mar 1 Nov 1 May 1		Portfolio: Applicants must submit evidence of creative or professional involvement in format of their choice.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Art History</b> Indicate specialization for M.A.: Architectural History, Historical Studies, or Museum Studies	Art History (828-2784)	M.A., Ph.D.	Fall Spring	Mar 1 Nov 1	GRE	Ph.D. only; contact department for additional admission requirements

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Biochemistry</b>	Biochemistry (828-3506) hgvanant@hsc.vcu.edu	M.S., Ph.D.,  Certificate	Fall preferred  Fall	Applications received prior to Feb 15 given priority consideration  No deadline	GRE, MCAT or DAT	MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Biology</b>	Biology (828-1562)	M.S.	Fall Spring Summer	Jul 1 Nov 15 May 1	GRE-General	
<b>Biomedical Engineering</b>	Biomedical Engineering (828-7263) glbowlin@vcu.edu	M.S., Ph.D.	Fall Spring	Feb 15 Nov 15	GRE	Contact department for Biomedical Engineering brochure
<b>Biostatistics</b>	Biostatistics (828-9824) rmboyle@vcu.edu	M.S., Ph.D.	Fall preferred	Applications received prior to Feb 15 given priority consideration	GRE, MCAT or DAT	Contact department for Biostatistics brochure  MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Biostatistics</b> Clinical Research (For professionals holding terminal degrees)	Biostatistics (828-9824) rmboyle@vcu.edu	M.S.	Fall preferred	Applications received prior to Feb 15 given priority consideration	GRE, MCAT or DAT	M.D., D.D.S., Pharm.D. or equivalent health science professional degree  MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Business (See Business – Certificates, Business – Graduate Certificates, Business – M.S., Business – Ph.D., Business Administration – M.B.A., Accounting, Economics and Taxation)</b>						
<b>Business – Certificates</b> With the exception of the Graduate Certificate in Real Estate and Urban Land Development, all School of Business certificates are post-baccalaureate undergraduate certificates. Contact the School of Business (804) 828-4622 directly for information and application materials.						
<b>Business – Graduate Certificate</b> Real Estate and Urban Land Development	Business (828-4622)	Certificate	Fall Spring Summer	Jul 15 Nov 15 Mar 15		Minimum of five years experience is preferred.
<b>Business – M.S.</b> Indicate specialization: Decision Sciences, Finance, Global Marketing Management, Human Resource Management and Industrial Relations, Information Systems, or Real Estate Valuation	Business (828-4622)	M.S.	Fall  Spring  Summer	Apr 1 – early decision Jun 1 – final deadline  Nov 1  Mar 1	GMAT	
<b>Business – Ph.D.</b> Select one major specialization: Accounting, Information Systems, or Organizational Behavior, and one minor track: Decision Sciences, Economics, Finance, Human Resource Management and Industrial Relations, International Business, Marketing, or other related areas of study approved by the School of Business	Business (828-4622)	Ph.D.	Fall	Feb 15	GMAT	Accounting majors admitted fall 2003 and alternating years thereafter
<b>Business Administration – M.B.A.</b> Indicate specialization: without concentration, with concentration, or Fast Track Executive M.B.A.  For M.B.A. with a concentration, indicate track: Accounting, Decision Sciences, Economics, Finance, Human Resource Management and Industrial Relations, Information Systems, Marketing, Real Estate and Urban Land Development, or Risk Management and Insurance	Business (828-4622)  Fast Track (828-3939)	M.B.A.  Fast Track M.B.A.	Fall  Spring  Summer  Fall only	Apr 1 – early decision Jun 1 – final deadline  Nov 1  Mar 1  Jun 1	GMAT    GMAT	

## Appendices

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semesters of entry	Deadline dates	Test requirements	Special requirements
<b>Ceramics</b>	Crafts (828-1477)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of recent, representative work, four of which must be drawings and the remainder of which must be in field of ceramics.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Chemistry</b> Indicate specialization: Analytical, Inorganic, Organic, Physical, or Chemical Physics (Ph.D. only)	Chemistry (828-1298)	M.S., Ph.D.	Fall Spring	Mar 15 Nov 15	GRE	
<b>Clinical Laboratory Sciences</b> (formerly Medical Technology) Indicate specialization: Advanced Master's Program or Categorical Master's Program	Clinical Laboratory Sciences (828-9469)	M.S.	Fall Spring	Jul 1 Nov 15	GRE	Contact department for list of institutions with guaranteed admissions agreements
<b>Computer Science</b>	Computer Science (828-0575) compsci@vcu.edu	M.S.	Fall Spring	Jul 1 Nov 15	GRE-General	Contact director of graduate studies for specific requirements
<b>Counselor Education</b>	Educational Studies (828-1332)	M.Ed.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Creative Writing</b> Indicate specialization: Fiction, Poetry, or both genres	English (828-1329)	M.F.A.	Fall	Feb 1	GRE-General	Portfolio
<b>Criminal Justice</b> (See also Forensic Science)	Criminal Justice (828-1050)	M.S.	Fall Spring	Apr 1 Nov 1	GRE	
<b>Criminal Justice</b>	Criminal Justice (828-1050)	Certificate	Fall Spring	May 1 Nov 1	GRE	
<b>Curriculum and Instruction</b> Indicate specialization: Early Childhood/Elementary Education, Middle Education, Secondary Education, Instructional Technology (including Library/Media)	Teacher Education (828-1305)	M.Ed.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Design</b> For specialization in Interior Environments	Interior Design (828-1713)	M.F.A.	Fall Spring	May 1 (Mar 1 for financial assistance) Oct 1		Portfolio necessary for all specializations
For specialization in Photography and Film	Photography and Film (828-1695)	M.F.A.	Fall Spring	May 1 (Mar 15 for financial assistance) Nov 1 (Oct 1 for financial assistance)		Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
For specialization in Visual Communications	Communication Arts and Design (828-7923)	M.F.A.	Fall No spring admissions	Rolling admission until Jul 1 (Mar 15 for financial assistance)		Interview recommended for Visual Communications
<b>Dentistry</b> Indicate specialization: Endodontics, Orthodontics, Pediatric Dentistry or Periodontics	Endodontics (828-0784)	M.S.	Fall	Sep 15	NDBE	See School of Dentistry Graduate Chapter in the Graduate and Professional Programs Bulletin
	Orthodontics (828-9326)	M.S.	Fall	Sep 30	NDBE	
	Pediatric Dentistry (828-1790)	M.S.	Fall	Oct 1	NDBE	
	Periodontics (828-4868)	M.S.	Fall	Sep 1	NDBE	

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Economics</b> Indicate specialization: Without concentration or with concentration in Financial Economics	Business (828-4622)	M.A.	Fall Spring Summer	Jul 15 Nov 15 Mar 15	GRE-General (GMAT acceptable for financial track)	
<b>Education (See Administration and Supervision, Adult Education and Human Resource Development, Counselor Education, Curriculum and Instruction, Health and Movement Sciences, Human Resource Development, Library/Media Specialist, Principals and Supervisors, Reading, Reading Specialist, Recreation, Parks and Sport Leadership, Special Education, Teaching and Education – Ph.D. Program)</b>						
<b>Education – Ph.D.</b> Indicate specialization: Adult Education and Human Resource Development, Educational Leadership, Instructional Leadership, Research and Evaluation, Special Education and Disability Leadership, or Urban Services Leadership	Graduate Studies in Education (828-6530)	Ph.D.	Summer, Fall	Jan 15	GRE	Personal interview and writing sample required.  Supplemental work experience and education goals statements, professional vitae/resume, and current supervisor's contact information
<b>Engineering</b>	Engineering (828-0266) eayates@vcu.edu	M.S., Ph.D.	Fall  Spring	Jul 1 (Feb 15 for financial assistance)  Nov 15	GRE	
<b>English</b> Indicate specialization: Literature, Writing and Rhetoric	English (828-1329)	M.A.	Summer, Fall Spring	Apr 1 Nov 15	GRE-General	
<b>Environmental Studies</b> (See Interdisciplinary Studies) (pending final approval as stand-alone M.S. degree program)						
<b>Epidemiology</b> (pending final SCHEV approval)	Preventive Medicine and Community Health Nursing	Ph.D.				
<b>Fibers</b>	Crafts (828-1477)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of recent, representative work, four of which must be drawings and the remainder of which must be in field of fibers.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Fine Arts</b> See areas of specialization for more information: Ceramics, Fibers, Furniture Design, Glassworking, Jewelry/ Metalworking, Painting, Printmaking, and Sculpture	Painting and Printmaking (828-1696)  Sculpture (828-1511)  Other Fine Arts Specializations (828-1750)	M.F.A.  M.F.A.  M.F.A.	Fall Spring  Fall Spring  Fall Spring	Feb 15 Oct 15  Feb 15 Oct 15  Feb 15 Oct 15		Portfolio: See areas of specialization for specific information about portfolio requirements.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Forensic Science</b> (pending final SCHEV approval as stand-alone M.S. degree program)	Forensic Science (828-1674)	M.S.	Fall only	Apr 1	GRE	Undergraduate degree in natural sciences; completion of two semesters of organic chemistry with laboratories

## Appendices

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semesters of entry	Deadline dates	Test requirements	Special requirements
<b>Furniture Design</b>	Crafts (828-1477)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of recent, representative work, four of which must be drawings and the remainder of which must be in the field of wood/furniture design.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Genetic Counseling</b> (See also Human Genetics)	Human Genetics (828-9632) lvanner@hsc.vcu.edu	M.S.	Fall	Applications received prior to Feb 15 given priority consideration	GRE, MCAT or DAT	MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Gerontology</b>	Gerontology (828-1565)	M.S.	All semesters		GRE or MAT	
<b>Glassworking</b>	Crafts (828-1477)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of recent, representative work, four of which must be drawings and the remainder of which must be in the field of glass.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Health Administration Professional M.S.H.A. Program-Online</b>	Health Administration (828-0719)	M.S.H.A.	Summer	Mar 15	GRE or GMAT	
<b>Health and Movement Sciences</b>	Health and Physical Education (828-1948)	M.S.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Health Related Sciences</b> Indicate specialization: Clinical Laboratory Sciences, Gerontology, Health Administration, Nurse Anesthesia, Occupational Therapy, Physical Therapy, Radiation Sciences, or Rehabilitation Leadership	Allied Health Professions Dean's Office (828-3273)	Ph.D.	Fall	Mar 15	GRE or MAT	Contact School of Allied Health Professions Dean's Office for specific admission requirements
<b>Health Services Administration</b>	Health Administration (828-0719)	M.H.A.	Fall	Mar 15	GRE or GMAT	
<b>Health Services Organization and Research</b>	Health Administration (828-5220)	Ph.D.	Fall preferred	Apr 15	GRE or GMAT	Contact the department for specific admission requirements
<b>Historic Preservation Planning</b> (pending final approval)	Urban Studies and Planning (828-2489)	Post-baccalaureate Certificate	Fall Spring	July 20 Nov 30	GRE	
<b>History</b>	History (828-1635)	M.A.	Fall Spring Summer	Jul 1 Dec 1 Apr 1	GRE	
<b>Human Genetics</b> (See also Genetic Counseling)	Human Genetics (828-9632) rshiang@hsc.vcu.edu	M.S., Ph.D.,  Certificate	Fall  Fall	Applications received prior to Feb 15 given priority consideration  No deadline	GRE, MCAT or DAT	International applicants must score 600 or greater on the TOEFL  MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs



Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Human Resource Development</b>	Educational Studies (828-1332)	Post- baccalaureate Certificate	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Immunology (See Microbiology/Immunology)</b>						
<b>Interdisciplinary Studies</b> Indicate specialization:						See M.I.S. Web site or contact School of Graduate Studies for proposal essay and curriculum planning form required for applicants proposing individual plans of study
Interdisciplinary Arts (off-campus program)	School of the Arts (828-3561)	M.I.S.	Fall Spring Summer	Jul 1 Dec 1 May 1	GRE	
Environmental Studies (pending final approval as a stand-alone M.S. degree program)	Center for Environmental Studies (828-7202)	M.I.S.	Fall Spring Summer	Jul 1 Dec 1 May 1	GRE	
Individual plans of study developed with program coordinator	School of Graduate Studies (828-6916)	M.I.S.	Fall Spring Summer	May 1 Oct 1 Mar 1	GRE	
<b>Integrative Life Sciences</b>	VCU Life Sciences (828-1562) lsmock@saturn.vcu.edu	Ph.D.	Fall Spring Summer		GRE – General	Scores for appropriate advanced tests (in particular, Biology, Chemistry, or Molecular Biology/ Biochemistry) are recommended.
<b>Jewelry/Metalworking</b>	Crafts (828-1477)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of recent, representative work, four of which must be drawings and the remainder of which must be in the field of jewelry/ metalworking.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Library/Media Specialist</b>	Teacher Education (828-1305)	Post- baccalaureate Certificate	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	Teacher Certification
<b>Mass Communications (See Advertising or Scholastic Journalism)</b>						
<b>Mathematical Sciences</b> Indicate specialization: Applied Mathematics, Mathematics, Operations Research, or Statistics	Mathematics and Applied Mathematics (828-1301)  Statistical Sciences and Operations Research (828-1301)	M.S.	Fall Spring	Jul 1 Nov 15	GRE-General	Contact director of graduate studies for specific admission requirements
<b>Medical Technology</b> (See Clinical Laboratory Sciences)						
<b>Microbiology/Immunology</b>	Microbiology/ Immunology (828-9728) mlcrewey@hsc.vcu.edu	M.S., Ph.D.,  Certificate	Fall preferred  Fall	Applications received prior to Feb 15 given priority consideration  No deadline	GRE or MCAT	Combined GRE Verbal and Quantitative Score of 1200 or greater, MCAT score of 26 or greater preferred  International applicants should score 600 or greater on the TOEFL  MCAT acceptable in lieu of GRE for combined profes- sional/academic degree programs

## Appendices

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semesters of entry	Deadline dates	Test requirements	Special requirements
<b>Molecular Biology and Genetics</b> Interdisciplinary curricula with Biochemistry, Human Genetics, Microbiology and Pharmacology/Toxicology	M.B.G. Program (828-9093) christie@hsc.vcu.edu	M.S., Ph.D.	Fall preferred	Applications received prior to Feb 15 given priority consideration	GRE	Contact program director for specific admission requirements  MCAT acceptable in lieu of GRE for combined profes- sional/academic degree pro- grams
<b>Music</b> Indicate specialization: Composition, Music Education, Performance, including conducting	Music (828-1166)	M.M.	Fall  Spring  Summer	Jul 1 (Mar 15 for financial assistance)  Dec 1 (Nov 1 for financial assistance)  May 1	See special requirements	Audition or audition tapes and department exam or GRE Subject Music exam are required. (Request depart- ment exam from School of Graduate Studies, if not included with application.)  Composition also requires a portfolio.  Send audition tape to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of audition tape.</b>
<b>Neuroscience</b> Interdisciplinary curricula with Anatomy, Biochemistry, Physiology and Pharmacology/Toxicology	Neuroscience Program (828-7823) lsatin@mail2.vcu.edu	Ph.D.	Fall preferred	Applications received prior to Feb 15 given priority consideration	GRE	Contact Dr. L. Satin (828-7823)  For additional information, see <a href="http://www.vcu.edu/neurograd">http://www.vcu.edu/neurograd</a>
<b>Nonprofit Management</b>	Political Science and Public Administration (828-1575)	Certificate	All semesters	No deadlines	No test requirements	
<b>Nurse Anesthesia</b>	Nurse Anesthesia (828-9808)	M.S.N.A.	Fall only	Applications received by Nov 1 given priority consideration	GRE	Contact department for specific admission requirements
<b>Nurse Anesthesia, Post-certification CRNA Master's Program</b> (A track in the Nurse Anesthesia program for those students who are already certified nurse anesthetists)  List Nurse Anesthesia as curriculum, CRNA as specialization	Nurse Anesthesia (828-9808)	M.S.N.A.	Fall only	Applications received by Feb 1 given priority consideration	GRE	Contact department for specific admission requirements
<b>Nursing – M.S. Accelerated Second Degree</b> (Entry-level program for the qualified non-R.N. student who has earned a bachelor's degree in another discipline)  Indicate specialization: Adult Health (indicate Acute or Primary), Child Health, Family Health, Nurse Administration and Leadership, Integrative Psychiatric Mental Health Nursing, or Women's Health.  List Accelerated Second Degree as track	Nursing (828-5171) (1-800-828-9451)	M.S.	Summer only	Applications received by Dec 1 given priority consideration	GRE	See the Graduate and Professional Programs Bulletin or contact the School of Nursing for specific admission requirements
<b>Nursing – M.S.</b> Indicate specialization: Adult Health (Indicate Acute or Primary NP or CNS as track), Child Health, Family Health, Nursing Administration and Leadership, Integrative Psychiatric Mental Health Nursing, or Women's Health.  List as track: Traditional M.S. (for R.N. with B.S. in Nursing); Non B.S.N.-M.S. program (for R.N. with B.S./B.A. in another discipline); or R.N.-M.S. (for R.N. with Associate's or Diploma in Nursing).	Nursing (828-5171) (1-800-828-9451)	M.S.	Fall only	Applications received by Feb 1 given priority consideration	GRE	See the Graduate and Professional Programs Bulletin or contact the School of Nursing for specific admission requirements

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Nursing – Post-master's Certificate</b> (For master's prepared nurses who need courses for additional certification for advanced practice)  Indicate specialization: Adult Health (Indicate Acute or Primary as track), Child Health, Family Health, Nursing Administration and Leadership, Integrative Psychiatric Mental Health Nursing, Women's Health, or Nursing in Faith Communities	Nursing (828-5171) (1-800-828-9451)	Certificate	Fall preferred	Applications received by Feb 1 given priority consideration	GRE requested but not required	See the Graduate and Professional Programs Bulletin or contact the School of Nursing for specific admission requirements
<b>Nursing – Ph.D.</b> Indicate focus area: Biobehavioral Clinical, Healing, Immunocompetence, or Risk and Resilience	Nursing (828-5171) (1-800-828-9451)	Ph.D.	Fall – even years only	Applications received by Feb 1 given priority consideration	GRE	See the Graduate and Professional Programs Bulletin or contact the School of Nursing for specific admission requirements
<b>Occupational Therapy – Entry Level</b> (A three-year professional program based on three years of previous college work. Applicant may or may not have a bachelor's degree.)	Occupational Therapy (828-2219)	M.S.O.T.	Summer only <b>Note: Entering class begins second Monday in June each year</b>	Dec 1	GRE	See the Graduate and Professional Programs Bulletin or contact department for specific admission requirements. <b>Also, complete supplemental program information sheet</b> (Request from School of Graduate Studies, if not included with application).
<b>Occupational Therapy – Post-professional</b> (An advanced master's program for registered occupational therapists)	Occupational Therapy (828-2219)	M.S.	Fall preferred		GRE	Contact department for specific admission requirements
<b>Operations Research (see Mathematical Sciences)</b>						
<b>Painting</b>	Painting/Printmaking (828-1696)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of recent work or appropriate documentation  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Pathology</b>	Pathology (828-4802) seholt@hsc.vcu.edu	Ph.D.	Fall	Applications received prior to Feb 15 given priority consideration	GRE or MCAT	See the Department of Pathology Web site <a href="http://www.pathology.vcu.edu/index.html">http://www.pathology.vcu.edu/index.html</a>  MCAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Patient Counseling</b> Indicate specialization: Intern Certificate Graduate Certificate Master of Science	Patient Counseling (828-0540)	Certificate  Certificate  M.S.	Fall, spring and summer Fall, spring and summer Fall preferred	Contact department	   GRE	See Graduate and Professional Programs Bulletin for description of each program. Contact department for specific admission requirements.
<b>Pharmacology/Toxicology</b>	Pharmacology/ Toxicology (828-8400) ssawyer@hsc.vcu.edu	M.S., Ph.D.  Certificate	Fall preferred  Fall	Applications received prior to Feb 15 given priority consideration  No deadline	GRE, MCAT or DAT	See Web site for more information: <a href="http://www.vcu.edu/pharmtox">http://www.vcu.edu/pharmtox</a>  MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Pharmaceutical Sciences</b> Indicate specialization: Medicinal Chemistry, Pharmaceutics, Pharmacotherapy, or Pharmacy Administration	Medicinal Chemistry (828-8483) Pharmacy (828-8367) Pharmaceutics (828-6102)	M.S., Ph.D.	Fall preferred	Jun 1 (Submission of application by Mar 15 highly recommended)	GRE	International applicants must complete the TOEFL and international admissions application.

## Appendices

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Physical Therapy – Advanced</b> (An advanced master's program for licensed physical therapists who have graduated from PT programs approved by the APTA)  List PT as curriculum, Advanced as specialization, and indicate track: Musculoskeletal PT, Neurological PT	Physical Therapy (828-0234)	M.S.	Fall	Admissions suspended for 2003-04	GRE	See the Graduate and Professional Programs Bulletin or contact department for specific admissions requirements
<b>Physical Therapy – Doctor of Physical Therapy Program (D.P.T.)</b> (Previously entry-level master's program. See Professional Programs Admissions Requirements.)						
<b>Physical Therapy/Anatomy</b>	Anatomy and Neurobiology (828-9512)  Physical Therapy (828-0234) sfinucan@vcu.edu	Ph.D.	Fall	May 1	GRE	B.S. or M.S. in Physical Therapy  Contact Anatomy or Physical Therapy for specific admission requirements
<b>Physical Therapy/Physiology</b> Physical Therapy	Physical Therapy (828-9512) sfinucan@vcu.edu  Physiology (828-9501) ford@hsc.vcu.edu	Ph.D.	Fall	May 1	GRE	B.S. or M.S. in Physical Therapy  Contact Physical Therapy or Physiology for specific admission requirements
<b>Physics</b> (See Chemistry for Ph.D. specialization in Chemical Physics)	Physics (828-1818)	M.S.	Fall Spring	Aug 1 Dec 1	GRE - General	
<b>Physiology</b>	Physiology (828-9501) ford@hsc.vcu.edu	M.S., Ph.D.,  Certificate	Fall preferred  Fall	Applications received prior to Feb 15 given priority consideration  No deadline	GRE, MCAT or DAT	MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Planning Information Systems</b>	Urban Studies and Planning (828-2489)	Certificate	Fall Spring	July 20 Nov 30	GRE	
<b>Pre-medical Basic Health Science</b> Indicate specialization: Anatomy, Biochemistry, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, Physiology	Anatomy/Neurobiology (828-9512)  Biochemistry (828-4117)  Human Genetics (828-9632)  Microbiology/Immunology (828-9728) mlcrewley@hsc.vcu.edu  Pharmacology/Toxicology (828-8400)  Physiology (828-9501)	Certificate	Fall	No deadline	GRE, MCAT or DAT	MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Principals and Supervisors</b>	Educational Studies (828-1332)	Post-master's Certificate	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Printmaking</b>	Painting/Printmaking (828-1696)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of representative work (or appropriate documentation)  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>

<b>Curriculum (In bold type) Specialization and track(s) (If applicable)</b>	<b>Department/phone (Area code 804)</b>	<b>Degree</b>	<b>Semester of entry</b>	<b>Deadline dates</b>	<b>Test requirements</b>	<b>Special requirements</b>
<b>Psychology</b> Clinical Counseling General	Psychology (828-1193)	Ph.D.	Fall only	Jan 15 Dec 15 Feb 15	GRE-General	Applicants should apply to the Ph.D. program only. Psychology does not offer a terminal master's degree. Personal interview may be required for the clinical program.
<b>Public Administration</b>	Political Science and Public Administration (828-1575)	M.P.A.	All semesters	Mar 30 (for financial aid consideration)	GRE, writing assessment only	
<b>Public Health</b>	Preventive Medicine and Community Health (828-9785) kpbryant@hsc.vcu.edu	M.P.H. M.D./M.P.H.	Fall Fall	Apr 1	GRE, MCAT, DAT	Students applying to joint M.D./M.P.H. program should be accepted to the VCU School of Medicine prior to applying to the M.D./M.P.H. program.  MCAT or DAT acceptable in lieu of GRE for combined professional/academic degree programs
<b>Public Management</b>	Political Science and Public Administration (828-1046)	Certificate	All semesters			
<b>Public Policy and Administration</b>	Center for Public Policy (828-6837)	Ph.D.	Fall only	Mar 15	GRE, GMAT, LSAT or MAT	Master's or professional degree required
<b>Reading</b>	Teacher Education (828-1305)	M.Ed.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Reading Specialist</b>	Teacher Education (828-1305)	Post-master's Certificate	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Real Estate (See Business – Graduate Certificate)</b>						
<b>Recreation, Parks and Sport Leadership</b> Indicate specialization: Leisure Service Management, Therapeutic Recreation, or Sport Leadership	Recreation, Parks and Sport Leadership (828-1948)	M.S.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	<b>Students applying to the Sport Leadership specialization should contact the VCU Sports Center (828-8326) directly for information and application materials</b>
<b>Rehabilitation Counseling</b>	Rehabilitation Counseling (828-1132)	M.S.	Fall Spring Summer	Aug 1 Dec 1 May 1	GRE or MAT	
<b>Rehabilitation Counseling/Professional Counseling</b>	Rehabilitation Counseling (828-1132)	Post-master's Certificate	Fall Spring Summer	Aug 1 Dec 1 May 1		
<b>Scholastic Journalism (M.S., Mass Communications)</b>	Scholastic Journalism (828-2660)	M.S.	Fall Spring Summer	Jul 1 Nov 1 Mar 1	GRE – General	Three recommendations. If endorsement or recertification for teaching journalism in a secondary school is sought, one recommendation must be from a school principal.  A letter detailing career goals and how the M.S. program in scholastic journalism applies to those goals.

## Appendices

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Sculpture</b>	Sculpture (828-1511)	M.F.A.	Fall Spring	Feb 15 Oct 15		Portfolio: 20 slides of representative work, 3 of which must be drawings, and/or video, CDs, or other appropriate documentation.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Social Work - Ph.D.</b>	Social Work (828-1044)	Ph.D.	Full-time – Fall only; Part-time – Fall and Spring	Applications received by Mar 1 given priority for financial aid	GRE – General Test	In addition to GRE General test, applicants must submit a writing sample
<b>Social Work – Advanced Standing</b> (A three-semester program for qualified students with B.S.W. degrees.) Indicate concentration: Clinical Social Work, or Social Work Administration, Planning and Policy Practice	Social Work (828-0703)	M.S.W.	Summer only – Richmond campus	Dec 1		If applying for off-campus program for concentration year, indicate location in item 5 on application
<b>Social Work – Regular Standing</b> (A two-year program for full-time students, a four-year program for part-time students) Indicate concentration: Clinical Social Work, or Social Work Administration, Planning, and Policy Practice (SWAPPP concentration available on Richmond campus only)	Social Work (828-0703)	M.S.W.	Full-time – Fall Part-time – Fall	Feb 1 Feb 1  (will consider late applications as space allows)		If applying for off-campus program, indicate location in item 5 on application
<b>Sociology</b>	Sociology (828-1026)	M.S.	Fall Spring	Jul 1 (Feb 15 for financial assistance) Nov 15	GRE	
<b>Special Education</b> Indicate specialization: Early Childhood Special Education, Emotional Disturbance, Learning Disabilities, Mental Retardation, Severe Disabilities	Teacher Education (828-1305)	M.Ed.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Statistics (See Mathematical Sciences)</b>						
<b>Taxation</b> Indicate specialization: Academic or Professional	Business (828-4622)	M.Tax.	Fall Spring Summer	Jul 15 Nov 15 Mar 15	GMAT (may be waived for professional track)	Professional track requires documentation of CPA or JD
<b>Teaching – M.T.</b> (A five-year program combining undergraduate and graduate study) Indicate specialization: Early Childhood/Elementary Education, Middle Education, Secondary Education, Special Education	Teacher Education (828-1305)	M.T.	Fall Spring Summer	May 15 Nov 15 Mar 15	GRE or MAT	
<b>Teaching – Certificate</b> Indicate specialization: Secondary Education	Teacher Education (828-1305)	Post- baccalaureate Certificate	Fall Spring Summer	Mar 1 Oct 15 Mar 1	GRE or MAT	Contact Division of Teacher Education for further information

Curriculum (In bold type) Specialization and track(s) (If applicable)	Department/phone (Area code 804)	Degree	Semester of entry	Deadline dates	Test requirements	Special requirements
<b>Theatre</b> Indicate specialization: Acting, Costume Design, Directing, Scene Design, Theatre Pedagogy	Theatre (828-1514)	M.F.A.	Fall only for Acting  Fall, Spring and Summer for Directing, Theatre Pedagogy, Costume and Scene Design	May 1 for Acting  Jun 1 for Directing, Costume and Scene Design  No deadline for Theatre Pedagogy		Audition or portfolio and personal interview required. Contact department for additional admission requirements. There are a limited number of acting and directing students admitted each year. Early applicants will be given first priority.  Send portfolio to School of Graduate Studies with application and supporting documentation. <b>Include self-addressed, stamped envelope for return of portfolio.</b>
<b>Toxicology</b> (See Pharmacology/Toxicology)						
<b>Urban and Regional Planning</b> Indicate specialization: Community Revitalization Planning, Environmental Planning, International Planning, or Metropolitan Planning	Urban Studies and Planning (828-2489)	M.U.R.P.	Fall  Spring	Jul 20 (Mar 15 for financial assistance) Nov 30	GRE, GMAT or LSAT	
<b>Urban Revitalization</b>	Urban Studies and Planning (828-2489)	Certificate	Fall Spring	Jul 20 Nov 30		

# Contacting the School of Graduate Studies

## In person

School of Graduate Studies  
1001 Grove Ave.

## By telephone

(804) 828-6916

## By fax

(804) 828-6949

## By mail

School of Graduate Studies  
Virginia Commonwealth University  
P.O. Box 843051  
Richmond, VA 23284-3051

## By e-mail

vcu-grad@vcu.edu

## World Wide Web

<http://www.vcu.edu/graduate>

View information about graduate study at Virginia Commonwealth University as well as information about the university, the city of Richmond and the commonwealth of Virginia.

## Graduate and Professional Programs Bulletin

The Graduate and Professional Programs Bulletin can be found at the Web site indicated above, ordered from VCU Creative Services by calling (804) 827-0466, or purchased in the VCU Bookstores.

## Information

Refer to the directory below and to the Graduate Admission Requirements chart for school and department listings and other frequently requested phone numbers.

# Directory

TDD: (800) 828-1120  
(Area Code 804)

## Admissions

Graduate .....	828-6916
Dental School .....	828-9196
Honors Program/Guaranteed Admissions .....	828-1803
International .....	828-1829
Medical School (M.D.) .....	828-9629
Pharmacy (Pharm.D.) .....	828-3000
Physical Therapy (D.P.T.) .....	828-0234
Undergraduate .....	828-1222

## Assistantships/Fellowships

Contact graduate program directors at phone numbers listed in the Graduate Admission Requirements chart.

<b>Career Center</b> .....	828-1645
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## Disability Support Services

Academic Campus .....	828-1139
MCV Campus .....	828-9782

<b>EEO/AA Services</b> .....	828-1347
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## Financial Aid Information/Applications

Academic Campus .....	828-6669
MCV Campus .....	828-9800

## Housing Information

Academic Campus .....	828-7666
MCV Campus .....	828-1800
Off Campus .....	828-6492

## Information (General)

University .....	828-0100
VCU Health System's MCV Hospitals .....	828-9000

## International Education, Office of

English Language Program .....	828-2551
International Admissions .....	828-1829

## Parking

Academic Campus .....	828-8726
MCV Campus .....	828-0501

<b>Off-campus Credit Instruction</b> .....	828-8819
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## Registration

Academic Campus .....	828-1349
MCV Campus .....	828-9800

<b>Residency Information</b> .....	828-0366
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<b>Student Accounting</b> .....	828-2341
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<b>Student Affairs, Division of</b> .....	828-3648
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## Testing Information

GRE, GMAT and LSAT .....	828-6916
PRAXIS .....	828-1927
MAT .....	828-6277

<b>Veterans' Affairs</b> .....	828-6166
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# 2003-04 Professional Programs Admission Requirements

When completing an application to professional degree programs, refer to this chart as well as the chapters within this bulletin for the major and school, degree and any special requirements. Applicants are encouraged to contact the school sponsoring the intended major (contact numbers listed in the chart below).

<b>Major concentration</b>	<b>Contact information</b>	<b>Degree</b>	<b>Special requirements</b>
<b>Dental Surgery</b>	<b>School of Dentistry</b> 828-9196	D.D.S.	Students must complete the preparatory program before applying to the D.D.S. program. Refer to the School of Dentistry Professional Programs' chapter of this bulletin for preparatory program information.
<b>Medicine</b>	<b>School of Medicine</b> somume@hsc.vcu.edu	M.D.	Students must complete the preparatory program prior to applying for admissions to the School of Medicine. Refer to the School of Medicine Professional Programs' chapter of this bulletin for preparatory program requirements.
<b>Pharmacy</b>	<b>School of Pharmacy</b> 828-3000	Pharm.D.	Students must complete the preparatory program before applying to the professional program. Refer to the School of Pharmacy Professional Programs' chapter of this bulletin for preparatory program requirements.
<b>Physical Therapy</b>	<b>School of Allied Health Professions</b> 828-0234	D.P.T.	Refer to the School of Allied Health Professions Professional Programs' chapter of this bulletin for admission requirements. (Semester of entry is summer — entering classes begins in July.) (Applicants must have a B.S. or B.A. degree from accredited college or university.)

# University Centers and Institutes

Through the direction of the mission of the university, VCU has implemented several university centers and institutes in effort to enhance research and educational opportunities. University centers are interdisciplinary and comprehensive programs organizing collaboration in teaching, research, service, and clinical and other training functions. These centers have significant external funding as well as a broad-based faculty involvement. All centers direct their efforts in meeting the overall mission of the university. University institutes also meet the general University Mission, involve a broad base of faculty, and earn a significant portion of funding from external sources. These institutes, however, are multidisciplinary, heavily research-oriented and linked to the Virginia Biotechnology Research Park.

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## University centers

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### Center for Environmental Studies

The Center for Environmental Studies was established in 1993 with the goal of creating an academic focus for the growing number of multidisciplinary initiatives in environmental studies at VCU. The center's objectives complement the broader University Mission in teaching, research, and service by providing access to the full scope of technical, instructional, and supporting resources that are offered by a large research university. These resources range from one of the state's three major research libraries to a geographic information system (GIS) laboratory and extensive computing facilities.

However, the most important assets to CES are its faculty and staff. In each of their respective fields, these researchers and educators are recognized experts, contributing a collective network of knowledge to the center's interdisciplinary programs. These programs include ecological science research, environmental health assessment, environmental policy ecological risk assessment, and the development and application of emerging environmental technologies. In all of these areas, it is the faculty, staff, and students that emphasize the cen-

ter's goal of focusing on the interplay between technology and contemporary environmental issues.

### Center for Public Policy

The Center for Public Policy was established on July 1, 1994 as an initiative of A Strategic Plan for the Future of Virginia Commonwealth University with the goal of focusing the university's multidisciplinary efforts in public policy. As a comprehensive, university-wide center, the CPP has responsibilities in each area of the university's broader missions: teaching, research, and public service.

The center houses and administers the newly established Ph.D. program in public policy and administration; as well as, conducts basic and applied research on a number of public policy matters, with special attention to health policy, urban and metropolitan development, state and local government, and politics. The newly developed program is designed to prepare students for roles concentrating in government, universities, research organizations, and other settings. The Survey and Evaluation Research Laboratory also contributes to the research and evaluation for the government, public and private non-profit agencies, the mass media, and VCU's faculty and administration. In addition, the center engages in significant service through its training programs, conferences, publications, and other contributions to public discourse.

### Clinical Research Center for Periodontal Diseases

The Clinical Research Center for Periodontal Diseases was established in 1978 and is supported by the National Institute of Health. The National Institute of Dental and Craniofacial Research provides funding to the center to support clinical investigation into the etiology and pathogenesis of human periodontal diseases, with emphasis on genetic and immunologic risk factors.

Serving as a link between basic research and clinical practice, the center concen-

trates its efforts in research, teaching and training, and collaborating research efforts. Consisting of four major components (human genetics, immunology, inflammatory mediators and biostatistics), the center serves as the research focus for periodontology at VCU.

### Center for the Study of Biological Complexity

The Center for the Study of Biological Complexity (CSBC) is a major focus of research and scholarly activity in VCU Life Sciences. The mission of the CSBC is to build an interdisciplinary academic community centered on integrative discovery science, systems biology and the principles of complexity to address the challenges of the life sciences revolution of the 21st century. CSBC faculty, fellows and students apply the mathematical and computational principles of complexity to research, instruction and other scholarly activity in the life sciences.

The overall goal of the CSBC is to globally elucidate and understand the functional roles of molecular interactions that vary both temporally and spatially in cells, tissues, organs and organisms. The research model is one in which scientists historically separated by disciplinary boundaries work in close collaboration to advance the integrative discovery biology and systems biosciences which have emerged as a consequence of the recent rapid advances in genomics, proteomics, pharmacogenomics and bioinformatics.

The CSBC promotes its mission by: 1) the development of faculty resources that support its mission through strategic partnerships with other academic units; 2) enhancement of VCU's capacity to perform genomic, proteomic, pharmacogenomic and bioinformatic research through investment in the personnel and infrastructure in key core service labs including the Nucleic Acids Research Facilities, the Mass Spectrometry Resource for Biocomplexity, the Pharmacogenomics and Structural Biology Core, and the Bioinformatics Computational Core Laboratories; 3) development and support of interdisciplinary instructional programs such as the proposed B.S.-M.S. in Bioinformatics, the Ph.D. in

Integrative Life Sciences, and the Bioinformatics and Bioengineering Summer Institute for upper level undergraduates; 4) extending beyond VCU's boundaries with an active program of internationally respected external fellows.

For more about the CSBC and its programs, refer to its Web site at <http://www.vcu.edu/csbc>.

## Center for Teaching Excellence

In August of 1999, the Center for Teaching Excellence was established to promote and encourage a culture of excellence in teaching at Virginia Commonwealth University. Its mission — benefiting faculty (full time, part-time and adjunct), administrators and graduate assistants in each of the university's 10 schools and the college — is carried out through both basic and advanced information about the teaching/learning process through group workshops, self-study materials and individual consultations. The center is dedicated to be responsive to faculty and student concerns and will evolve and change over time to accommodate those concerns.

The following examples demonstrate the center's commitment to university teaching excellence:

- supplying faculty with the resources to achieve excellence in the classroom
- developing the teaching skills of both faculty and graduate assistants
- promoting the application of technology in the classroom
- publicizing both successful faculty and their quest for excellence
- providing the university with a rich and varied resource base for teaching

For more information on the center, visit the Web at <http://www.vcu.edu/cte>.

## Heart Center

The Heart Center at VCU's Medical College of Virginia Campus is internationally recognized as a leader in cardiac and vascular services, innovation and teaching. Focusing on superior quality, the center combines individualized, personal care with the latest innovative technical and pharmacologic advances. Specialized services include electrophysiology, coronary intervention, heart failure and transplantation as well as the latest in cardiovascular diagnosis and imaging. In addition to patient care, research activities include genetic approaches to heart muscle protection, better understanding of the cellular causes of rhythm disturbances as well as evaluating

the latest in new device technology. Because of the excellence in patent care and research, the center is highly regarded by U.S. and international physicians for specialized cardiovascular training. The center is recognized for excellence in care, optimal outcomes, high patient satisfaction and cost efficiency. Clinical sites include the MCV Campus, Stony Point and major outreach programs. Physician referral is available at (800) 726-6161 and other questions can be directed to (804) MCV-HEART.

## HIV/AIDS Center

The HIV/AIDS Center of VCU coordinates all HIV/AIDS related activities within the university and is responsible for developing increased collaborative efforts related to HIV/AIDS between the university and the community. The center was created in 1993 as part of the strategic plan for the university and is administered through the Office of the Vice President for Health Sciences of VCU. Its mission is to improve the health and social condition of persons with the HIV infection and to prevent its spread through the means of education, research, and service.

As an extension of the AIDS Program of VCU established in 1986, the center offers multifaceted and interrelated programs composed of a rapidly expanding clinical program, a multidisciplinary program, HIV antibody testing and counseling site, basic and clinical research programs, and significant involvement in policy development. In addition, the center has a history of collaboration with community-based AIDS Service Organizations, other care providers, and educators and researchers throughout the Richmond area, the state and the nation.

## Inger and Walter Rice Center for Environmental Life Sciences

In October 2000, VCU President Eugene P. Trani announced a major gift from Mrs. Inger V. Rice. This generous donation included 343 acres of land and a 70-acre lake on the northern bank of the James River, southeast of Richmond between Berkeley and Shirley Plantations. Located on the country's most historic river, the James, the Inger and Walter Rice Center for Environmental Life Sciences will be a nationally recognized living laboratory for VCU Life Sciences. The Virginia Rivers Initiative, headquartered at the Rice Center, will establish VCU as a leading academic institution for research and scholarship in ecology,

conservation, restoration, and public policy of large river ecosystems. The Rice property serves as an outdoor, living laboratory for VCU students and faculty, as well as K-12 students and teachers and other public groups, to conduct hands-on research in learning in areas of ecology, environmental sciences and natural resources management. By linking the Rice Center to the considerable computational and information technology assets of the Center for Environmental Studies and the Center for the Study of Biological Complexity, the Rice Center will participate in defining and developing the new field of ecoinformatics — the study of biological complexity across broad spatial and organizational scales.

Additional information about the Rice Center is available at <http://www.vcu.edu/lifesci>.

## Liver Center

The Liver Center, currently in the process of development, has been created to unify the programs in clinical hepatology, liver transplantation and basic science research of hepatic cell biology and metabolic function. In collaboration with these clinical and basic science departments of Virginia Commonwealth University, the center proposes to provide specialized care to children and adults with all types of liver and biliary tract diseases and to develop new clinical and basic research programs to complement these clinical care activities. Their aim is to combine the efforts of a number of research laboratories and employ a wide variety of analytical, physiological, biochemical and molecular techniques in a single geographic location.

Under government, corporation and foundation grants, various clinical investigators, clinicians, and basic scientists will collaborate their ideas and expertise to promote teaching and education of physicians, graduate and post-graduate students, and the community at large on the importance of prevention and therapy of liver disease. Their efforts also will be applied in further educating physicians in the Richmond and surrounding areas.

## Massey Cancer Center

The Massey Cancer Center is the National Cancer Institute designated center at Virginia Commonwealth University. The center was established by the VCU Board of Visitors in 1972 as a result of the National Cancer Act.

Serving VCU as the focal point of cancer research, education and health care delivery activities, MCC's programs encompass all schools on the MCV Campus as well as several departments on the Academic Campus. Nationally and internationally recognized scientists focus their study on the causes, prevention and treatment of cancer. Their discoveries serve as the basis of multiple clinical trials including design of new anti-cancer drugs, testing of novel anti-cancer agents, development of immunotherapy and gene therapy approaches to cancer treatment, and the analysis of the composition of normal and malignant cells using gene micro-array technology.

Community service and education are high priorities for the Massey Cancer Center. Several programs and services provide assistance and education to the community. These programs include the center's specialized outpatient clinics at VCU Health System's MCV Hospitals, the Rural Cancer Outreach Program, MCC's Cancer Rehabilitation and Continuing Care Program, the National Cancer Institute funded Cancer Information Service, and the Linen-Powell Patient-Family Resource Library.

For more information about the Massey Cancer Center and its programs, refer to its Web site at <http://www.vcu.edu/mcc>.

### Harold F. Young Neurosurgical Center

VCU's Harold F. Young Neurosurgical Center is a nationally recognized center having expertise in clinical research and education as well as offering patients expert treatment for neurological and neurobehavioral disorders. Offering the only comprehensive faculty in metropolitan Richmond, the center is able to meet its mission of high quality patient care, education and research through its unique ability to establish and maintain a clinical, investigative and training environment for residents and graduate studies in a core curriculum for neurosciences. The center also serves as a coalition of individuals and programs that offer state of the art technologies and expertise to physicians and patients throughout the surrounding community.

### Virginia Microelectronics Center

The Virginia Microelectronics Center, a commonwealth resource located in the School of Engineering, has the Microelectronic Materials & Device Laboratory (MMDL) which focuses on wideband gap

semiconductor growth, substrate characterization, thin film device fabrication, quantum devices and piezoelectric strain effects. The Silicon Microfabrication Lab focuses on education, research and development of integrated circuits, micro-electro-mechanical systems and nanostructures.

## University institutes

### Institute for Drug and Alcohol Studies

The Institute for Drug and Alcohol Studies was formed in 1993 to promote excellence in research and education in substance abuse. The institute is comprised of over 35 faculty from six different departments encompassing both VCU campuses. It promotes a multidisciplinary approach to addressing the complex problems of drug and alcohol abuse. Institute faculty have active research programs on problems of abuse of tobacco, heroin, cocaine and other stimulants, hallucinogens, inhalants, cannabis and alcohol. These research studies encompass such areas as medicinal chemistry, molecular biology, pharmacology, behavioral sciences, and community-based treatment and prevention research. VCU is among the leading universities in the world in attracting research support for studies of this problem and has many acknowledged experts in the area. This active research program benefits greatly the educational mission of the university as well. There are many undergraduate and graduate degree and certificate programs that include substance abuse training. VCU also is a leader in training the next generation of addiction scientists in many fields. Institute faculty are also active in continuing education to bring the latest advances in research to community-based treatment and prevention professionals in Virginia and throughout the nation.

### Institute for Psychiatric and Behavioral Genetics

The Virginia Institute for Psychiatric and Behavioral Genetics was established in 1996 to facilitate the development of a multidisciplinary, integrated research program in the genetic epidemiology of psychiatric illness, drug abuse and human behavior and development. The institute offers collaborative support to a variety of VCU departments and programs as well as other universities and federal agencies through

funding provided by federal and private sources. The institute also provides ample educational opportunities for a variety of disciplines through seminars, workshops, classes and clinical studies.

### Institute for Structural Biology and Drug Discovery

Established in May 1997, the Institute for Structural Biology and Drug Discovery serves as a link between two distinct disciplines, structural biology and drug design, to create one medicinal field. This field facilitates new, innovative research and scholarship in this collaborative discipline.

Through multidisciplinary efforts among its faculty and clinicians, the institute combines structural molecular biology and medicinal chemistry to develop an educational component that prepares postdoctoral fellows and graduate students for the emerging area of structural molecular biology by moving beyond traditional disciplinary constraints.

### Institute for Women's Health

The VCU Institute for Women's Health was established by the VCU Board of Visitors in May 1999. The mission of the institute is to improve the health of women through health education, research, clinical care and leadership development, and to bring these diverse activities under a single umbrella, create synergy within VCU and foster coordinated alliances with the greater community.

Its goals are to support the development and implementation of state-of-the-art interdisciplinary clinical-services models for women's health care; to develop and expand educational programs and resources related to women's health; to facilitate and expand women's health research; and to improve the health of all women, including a special focus on the health needs of underserved women and women of color. In addition, the Institute serves as a coordinating body for all women's health activities at VCU.

For more information, visit the VCU Web site: <http://www.womenshealth.vcu.edu>.

### Philips Institute for Oral and Craniofacial Molecular Biology

The mission of the Philips Institute for Oral and Craniofacial Molecular Biology is to serve the university and the commonwealth of Virginia as a center of educational and research excellence focused on infectious, neoplastic and genetic diseases of the oral cavity, head and neck.

# VCU Academic Calendar

## 2003-04

Some school and/or departmental calendars may differ from the university's academic calendar. Please check with the specific program of study to ensure the appropriate calendar is followed.

### August 2003

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

#### 14-18

Advising and registration for new undergraduate students – Academic Campus

#### 16

Official date for certifying August diplomas

#### 18

Registration for new graduate and new certificate students – Academic Campus

#### 18-20

Orientation for new freshman, transfer and re-admitted students – Academic Campus

Orientation and registration – MCV Campus

#### 19

Registration for continuing students – Academic Campus

#### 21

Fall classes begin

#### 21-27

Add/drop and late registration

#### 27

Deadline for dean/departmental offices to submit all approved undergraduate change of major requests effective for the fall 2003 semester

### September 2003

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

#### 1

University closed

#### 10

Faculty Convocation

#### 5

Deadline for students to provide advance written notification to instructors of intent to observe religious holidays\*

#### 19

Last day for fall degree candidates to submit graduation applications to their advisers for December degrees – Academic Campus

Fall degree candidates should follow departmental deadlines – MCV Campus

#### 19

Last day for undergraduate students to submit work for removal of incomplete grades from spring semester or summer sessions – Academic Campus

### October 2003

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

#### 16-17

Reading days, no classes held – Academic Campus

#### 20-24

Advising for spring semester – Academic Campus

Students should follow departmental schedule – MCV Campus

#### 27

Spring semester advance registration begins for all students

#### 31

Last day to withdraw from a course with a mark of "W" – both campuses (except for courses not scheduled for the full semester)

### November 2003

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

#### 27-30

University closed – evening classes (classes beginning at 4 p.m. or later) do not meet on Nov 26

### December 2003

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

#### 5

Final date for graduate dean's approval signature on completion of graduate thesis/dissertation for December degree candidates (check with graduate program director regarding internal schedules for submission of copy, defense and school/college dean approval)

#### 6

Last day of classes for fall semester – both campuses

#### 8-12

Final examinations for fall semester – MCV Campus

#### 8-13

Final examinations for fall semester – evening classes

#### 8-16

Final examinations for fall semester – Academic Campus

#### 13

December Commencement

#### 20

Official date for certifying December diplomas

#### 20-Jan 4

University closed

#### 29

Holiday intersession classes begin

#### 31

Deadline for students to provide advance written notification to instructors of intent to observe religious holidays – holiday intersession\*

Please refer to the Web at  
<http://www.vcu.edu/academiccalendars>  
 for the summer 2004 Academic Calendar.

University calendars are accurate at the time of publication/posting, but subject to change.

\* Reasonable accommodations for completion of work missed should be made for students observing religious holidays. A partial list of major religious holidays is provided on the Web:  
<http://www.vcu.edu/hr/communications/major%20holidays3.htm>.

# VCU Academic Calendar

## 2003-04

Some school and/or departmental calendars may differ from the university's academic calendar. Please check with the specific program of study to ensure the appropriate calendar is followed.

### January 2004

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

#### 1-4

University offices closed

#### 10

Holiday intersession classes end

#### 13-15

Advising, registration and orientation for new undergraduate students – Academic Campus

#### 15

Registration for new graduate and new certificate students – Academic Campus

#### 16

Registration for continuing students – Academic Campus

#### 19

University closed†

#### 20

Spring classes begin

#### 20-26

Add/drop and late registration for all students

#### 26

Deadline for dean/departmental offices to submit all approved undergraduate change of major requests for the spring 2004 semester

#### 30

Last day for spring degree candidates to submit graduation applications to their advisers for May degrees – Academic Campus

Spring degree candidates should follow departmental deadlines – MCV Campus

#### 30

Deadline for students to provide advance written notification to instructors of intent to observe religious holidays\*

### February 2004

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

#### 18

Last day for undergraduate students to submit work for removal of incomplete grades for fall semester – Academic Campus

### March 2004

S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

#### 14-21

Spring break for both campuses

#### 22

Summer advance registration begins

#### 26

Last day to withdraw from a course with a mark of "W" – both campuses (except for courses not scheduled for the full semester)

#### 29-Apr 2

Advising for fall semester – Academic Campus

Students should follow departmental schedule – MCV Campus

### April 2004

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

#### 5

Fall semester advance registration begins

### May 2004

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

#### 4

Final date for graduate dean's approval signature on completion of graduate thesis/dissertation for May degree candidates (check with graduate program director regarding internal schedules for submission of copy, defense and school/college dean approval)

#### 4

Classes end for spring semester – Academic Campus; evening classes continue through May 8

#### 5

Reading day – Academic Campus

#### 7

Last day of classes for spring semester – MCV Campus

#### 6-14

Final examinations for spring semester – Academic Campus

#### 10-14

Final examinations for spring semester – MCV Campus

#### 10-15

Final examinations for spring semester – evening classes

#### 22

May Commencement

### Summer Session

#### 24-Aug 13

Summer 2004 session

Please refer to the Web at  
<http://www.vcu.edu/academiccalendars>  
for the summer 2004 Academic Calendar.

University calendars are accurate at the time of publication/posting, but subject to change.

\* Reasonable accommodations for completion of work missed should be made for students observing religious holidays. A partial list of major religious holidays is provided on the Web:  
<http://www.vcu.edu/hr/communications/major%20holidays3.htm>.

† Subject to approval

# VCU Campus Maps

## Academic Campus

### Academic Campus

- 1 (J-13) 100 W. Franklin St.
- 2 (D-8) 1000 W. Franklin St.
- 3 (E-6) 1205-1207 W. Broad St.
- 4 (A-13) 1312 W. Main St.
- 5 (A-13) 1314 W. Main St.
- 6 (A-12) 1315 Floyd Ave.
- 7 (F-9) 310 N. Shafer St.
- 8 (E-15) 6 S. Cherry St.
- 9 (A-4) 612-620 N. Lombardy St.
- 10 (B-13) 6-8 N. Harrison St.
- 11 (I-9) 906 W. Broad St.
- 12 (E-9) 916 W. Franklin St.(Rear)
- 13 (D-10) Anderson Gallery, 907 1/2 W. Franklin St.
- 14 (D-9) Anderson House, 913 W. Franklin St.
- 15 (G-7) Arts, School of, 1000 W. Broad St.
- 16 (F-10) Bird House, 820 W. Franklin St.
- 17 (F-10) Blanton House, 826-828 W. Franklin St.
- 18 (D-9) Bocock House, 909 W. Franklin St.
- 19 (F-7) Bookstore, 1111 W. Broad St.
- 20 (D-9) Bowe House, 917 W. Franklin St.
- 21 (J-9) Broad and Belvidere Student Apartments (under construction), 600 W. Broad St.
- 22 (D-9) Buford House, 922 W. Franklin St.
- 23 (C-13) Business School Auditorium, 1015 Floyd Ave.
- 24 (C-13) Business, School of, 1015 Floyd Ave.
- 25 (D-12) Cabell Library, James Branch, 901 Park Ave.
- 26 (C-16) Cary Street Field
- 27 (B-16) Cary Street Field Support Facility, 1011 W. Cary St.
- 28 (D-16) Cary Street Gym Annex, 917 Green Alley
- 29 (D-16) Cary Street Gym, 911 W. Cary St.
- 30 (B-12) Child Care Center, VCU, 1128 Floyd Ave.
- 31 (A-12) Dance Center, 10 N. Brunswick St.
- 32 (C-12) Education Annex, 109 N. Harrison St.
- 33 (H-15) Engineering, School of/Virginia Microelectronics Center, 601 W. Main St.
- 34 (H-10) Facilities and Financial Services Bldg., 700 W. Grace St.
- 35 (I-15) Finance Building, 327 W. Main St.
- 36 (E-10) Founder's Hall, 827 W. Franklin St.
- 37 (F-11) Franklin Street Gymnasium, 817 W. Franklin St.
- 38 (F-10) Franklin Terrace, 812-814 W. Franklin St.
- 39 (E-10) Ginter House, 901 W. Franklin St.
- 40 (G-15) Gladding Residence Center, 711 W. Main St.
- 41 (F-8) Grace Street Theater, 930-934 W. Grace St.
- 42 (F-10) Harrison House, 816 W. Franklin St.
- 43 (E-11) Hibbs Building, 900 Park Ave.
- 44 (G-10) Hunton House, 810 W. Franklin St.
- 45 (E-8) Internal Audit, 944 W. Grace St.
- 46 (G-11) Johnson Hall, 801 W. Franklin St.
- 47 (D-9) Kearney House, 921 W. Franklin St.
- 48 (F-9) Lafayette Hall, 312 N. Shafer St.
- 49 (I-12) Lindsey House, 600 W. Franklin St.
- 50 (E-9) McAdams House, 914 W. Franklin St.
- 51 (C-12) Meeting Center, 101 N. Harrison St.
- 52 (C-8) Meredith House, 1014 W. Franklin St.
- 53 (E-9) Millhiser House, 916 W. Franklin St.
- 54 (C-11) Moseley House, 1001 Grove Ave.
- 55 (C-11) Music Center, 1015 Grove Ave.
- 56 (C-15) Oliver Hall - Education Wing, 1015 W. Main St.
- 57 (C-14) Oliver Hall - Physical Science Wing, 1001 W. Main St.
- 58 (E-15) Parking, Academic Deck, 801 W. Main St.
- 59 (C-4) Parking, Bowe Street Deck, 609 Bowe St.
- 60 (A-16) Parking, Cary and Harrison (under construction)
- 61 (F-7) Parking, W. Broad St. Deck, 1111 W. Broad St.
- 62 (D-10) Pollak Building, 325 N. Harrison St.
- 63 (E-9) President's House, 910 W. Franklin St.
- 64 (C-9) Raleigh Building, 1001 W. Franklin St.
- 65 (H-11) Rhoads Hall, 710 W. Franklin St.
- 66 (F-11) Ritter-Hickok House, 821 W. Franklin St.
- 67 (D-9) Robertson Alumni House, Richard T., 924 W. Franklin St.
- 68 (C-9) Scherer Hall, 923 W. Franklin St.
- 69 (E-11) Shafer Court Dining Center (under construction), 810 Cathedral Place



- 70 (E-11) Shafer Street Playhouse, 221 N. Shafer St.
- 71 (E-5) Siegel Center, Stuart C., 1200 W. Broad St.
- 72 (E-13) Sitterding House, 901 Floyd Ave.
- 73 (C-12) Social Work, School of, 102-106 N. Linden St.
- 74 (B-5) Sports Backers Stadium, 100 Ave. of Champions
- 75 (C-5) Sports Medicine Center, 1300 W. Broad St.
- 76 (E-9) Stagg House, 912 W. Franklin St.
- 77 (D-9) Stark House, 915 W. Franklin St.
- 78 (E-9) Stokes House, 918 W. Franklin St.
- 79 (F-9) Survey Evaluation Research Laboratory, 912 W. Grace St.
- 80 (D-14) Temple Building, T. Edward, 901 W. Main Steet
- 81 (D-15) Thalhimier Tennis Center, 920 W. Cary St.
- 82 (G-10) Thurston House, 808 W. Franklin St.

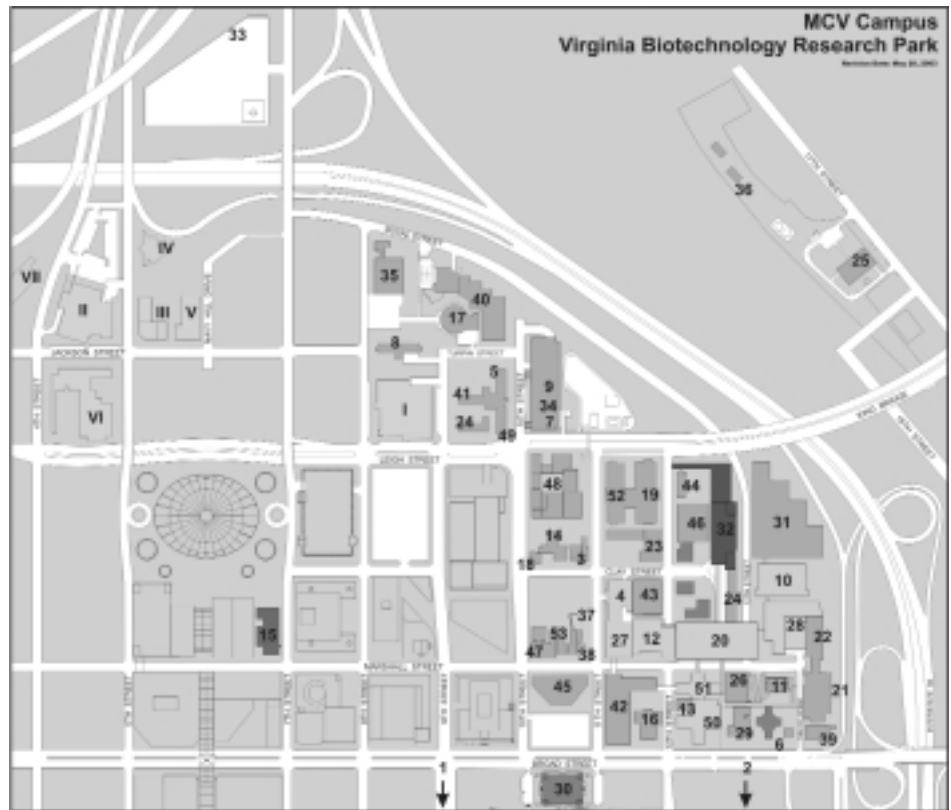
- 83 (C-15) Trani Center for Life Sciences, Eugene P. and Lois E., 1000 W. Cary St.
- 84 (E-13) University Student Commons, 907 Floyd Ave.
- 85 (E-9) Valentine House, 920 W. Franklin St.
- 86 (F-8) VCU Police, 938-940 W. Grace St.
- 87 (D-10) W.E. Singleton Center for the Performing Arts, 922 Park Ave.
- 88 (F-7) Welcome Center, 1111 W. Broad St.
- 89 (F-7) West Broad Street Student Apartments, 1100 W. Broad St.
- 90 (H-10) West Grace Street Student Housing, 701 W. Grace St.
- 91 (G-10) White House, 806 W. Franklin St.
- 92 (G-11) Williams House, 800 W. Franklin St.
- 93 (D-9) Younger House, 919 W. Franklin St.

# VCU Campus Maps

## Medical College of Virginia Campus and the Virginia Biotechnology Research Park

### MCV Campus

- 1 (P-10) 900 E. Main St.
- 2 (S-10) Adcenter, 1313 E. Main St.
- 3 (Q-7) Alumni House, MCV, 1016 E. Clay St.
- 4 (R-7) Ambulatory Care Center, 417 N. 11th St.
- 5 (P-5) Bear Hall, 600 N. 10th St.
- 6 (T-9) Beers-Newton House, College and Broad streets
- 7 (Q-5) Bookstore, MCV Campus, 601 N. 10th St.
- 8 (O-5) Cabaniss Hall, 615 N. 8th St.
- 9 (Q-5) Child Care Center, MCV Hospital, 607 N. 10th St.
- 10 (T-7) Clinical Support Center, 403 N. 13th St.
- 11 (T-9) Egyptian Building, 1223 E. Marshall St.
- 12 (R-8) Gateway Building, 1200 E. Marshall St.
- 13 (S-9) George Ben Johnston Auditorium, 1200 E. Broad St.
- 14 (Q-7) Grant House, William H., 1008 E. Clay St.
- 15 (M-8) Hospital Hospitality House, 610-612 E. Marshall St.
- 16 (R-9) Hunton Hall, 323 N. 12th St.
- 17 (P-4) Larrick Center, 641 N. 8th St.
- 18 (Q-7) Leigh House, 1000 E. Clay St.
- 19 (R-6) Lyons Dental Building, 520 N. 12th St.
- 20 (S-8) Main Hospital, 1250 E. Marshall St.
- 21 (T-9) Massey Cancer Center Addition (under construction)
- 22 (T-8) Massey Cancer Center, 401 College St.
- 23 (R-7) McGuire Hall and Annex, 1112 E. Clay St.
- 24 (P-5) McRae Hall, 600 N. 10th St.
- 25 (U-3) MCV Campus Steam Plant
- 26 (S-8) Medical Sciences Building, 1217 E. Marshall St.
- 27 (R-8) Nelson Clinic, 401-409 N. 11th St.
- 28 (T-8) North Hospital, 1300 E. Marshall St.
- 29 (S-9) Nursing Education Building, 1220 E. Broad St.
- 30 (Q-10) Old City Hall, 1001-1007 E. Broad St.
- 31 (T-7) Parking, "D" Deck, Faculty/Staff, 515 N. 13th St.
- 32 (S-7) Parking, "E" and "S" Deck, Faculty/Staff, 12th and Leigh streets
- 33 (M-1) Parking, "I" Lot, 7th St. at I-95 Interchange
- 34 (Q-5) Parking, "N" Deck, Patient-Vistor, 615 N. 10th St.
- 35 (O-4) Physical Plant Shops Bldg., 659 N. Eighth St.
- 36 (S-3) Physical Plant Storage Facilities, 1400 N. 17th St.
- 37 (Q-8) Putney House, Samuel, 1010 E. Marshall St.
- 38 (Q-8) Putney House, Stephen, 1012 E. Marshall St.
- 39 (T-9) Randolph Minor Hall, 301 College St. (under demolition)
- 40 (P-4) Recreation and Aquatic Center, 10th and Turpin streets
- 41 (P-5) Rudd Hall, 600 N. 10th St.
- 42 (R-9) Sanger Hall, 1101 E. Marshall St.



- 43 (R-8) Smith Building, Robert Blackwell, 410 N. 12th St.
- 44 (S-6) Strauss Research Lab, 527 N. 12th St.
- 45 (Q-9) The VCUHS Children's Pavilion, 1001 E. Marshall St.
- 46 (S-7) Tompkins-McCaw Library, 509 N. 12th St.
- 47 (Q-8) Virginia Mechanics Institute, 1000 E. Marshall St.
- 48 (Q-6) Virginia Treatment Center, 515 N. 10th St.
- 49 (P-5) Warner Hall, 600 N. 10th St.
- 50 (S-9) West Hospital, 1200 E. Broad St.
- 51 (S-9) Williams Clinic, A.D., 1202 E. Marshall St.
- 52 (R-6) Wood Memorial Building, 521 N. 11th St.
- 53 (Q-8) Zeigler House, 1006-1008 E. Marshall St.

### Virginia Biotechnology Research Park

- I (O-5) Biotech Center, 800 E. Leigh St.
- (O-5) Biotech One, 800 E. Leigh St.
- II (K-4) Biotech Two, 400 E. Jackson St.
- III (L-4) Biotech Three, 701 N. 5th St.
- IV (L-3) Biotech Four, 737 N. 5th St.
- V (L-4) Biotech Five, 700 Old Navy Drive
- VI (K-5) Biotech Six (under construction)
- VII (K-4) Biotech Seven (under construction)



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This index is not an official listing of VCU graduate faculty.  
For the official listing refer to the School of Graduate Studies Web site: [www.vcu.edu/gradweb](http://www.vcu.edu/gradweb)

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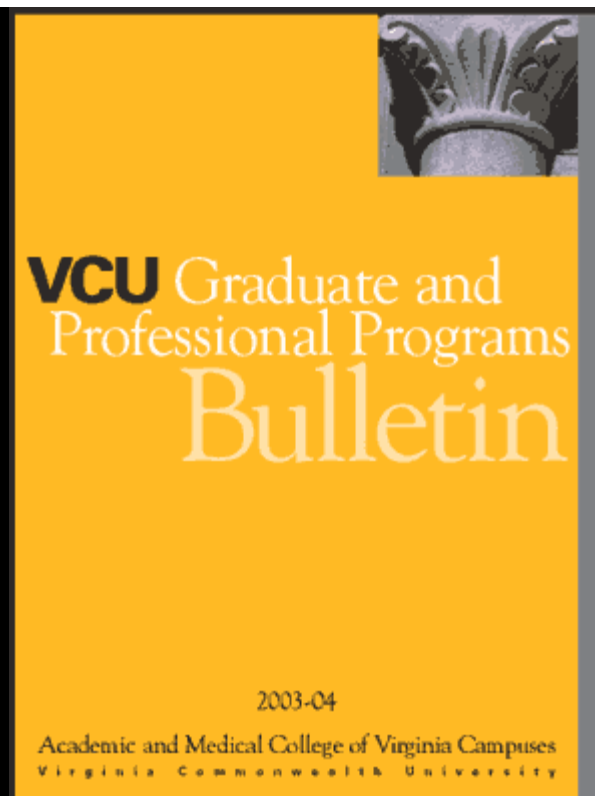
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## **Updates to the 2003-04 Graduate and Professional Programs Bulletin**

### **Graduate Programs Admission Requirements Summary**

Refer to the [Graduate Studies Web site](#) for the most up-to-date version of graduate program admission requirements and application deadlines.

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**Effective immediately, VCU is withdrawing from participation in SREB's Academic Common Market for all of its graduate programs. All graduate students currently enrolled at VCU under the auspices of the Academic Common Market will continue to receive the ACM benefit until they graduate from the ACM graduate program to which they were admitted, or until they leave VCU long enough that they would have to reapply in order to be readmitted.**

**If you have any questions about this matter, please contact the School of Graduate Studies (804) 828-6916.**

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### **Interdisciplinary Studies – Special M.S.W. options**

The following programs were inadvertently omitted from the Interdisciplinary Studies chapter of the bulletin.

### **Page 39 — M.S.W. and Certificate in School Social Work**

Through a collaborative program with the VCU School of Education, students may meet Virginia Department of Education standards for certification as school social workers in Virginia in addition to meeting requirements for the M.S.W. degree. Students interested in certification in school social work should contact their adviser during the first semester of their program. In order to meet the requirements of the M.S.W. degree and the School Social Work certification option, students complete a total of 63 graduate credits including six credit hours of approved graduate courses in education.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: Certificate for School Social Work Adviser.

### **M.S.W. and J.D.: Dual degree study in law and social work**

Through a cooperative arrangement with the T.C. Williams Law School, selected students in either school may pursue a combined four-year curriculum of graduate study leading to the degrees of master of social work and juris doctor. The program is established in recognition of the role of public law in social and economic life. The dual degree program prepares professionals versed in the values, knowledge and skills of both fields, bringing an integrated base of competency to the resolution of human and social problems.

Applicants must successfully meet the admission requirements of both schools and, upon admission, are assigned an adviser in each school. Students in dual degree study may begin the course work in either school, with the sequence of courses being determined by the point of entry.

The time normally required for completion of the integrated four-year curriculum is one academic year less than if each degree were taken separately. Elective courses will enable students to select areas in law and in social work that will meet their particular interests. Applications for admission must be made to each institution separately. Those interested should write both the Admissions Office of the T.C. Williams Law School, University of Richmond, VA 23173 and the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23298-0568.

### **M.S.W. and M.Div. dual degree study**

This four-year professional degree program is offered by Virginia Commonwealth University in cooperation with Richmond Theological Consortium schools that include Union-Presbyterian School of Christian Education, Baptist Theological Seminary at Richmond, and Samuel DeWitt Proctor School of Theology at Virginia Union University. The purpose of the dual degree program is to prepare students for service in occupations where social work and the church's ministries intersect; to enable social workers to perform and evaluate social work practices as they relate to biblical, theological, ethical, educational and pastoral perspectives; and equip graduates for various forms of ministry in which clinical and administrative skills in social work are critical.

This program requires four continuous years of study and leads to a master of social work degree conferred by VCU and a master of divinity degree conferred by Union-PSCE, BTRSR or STVU. Permission for part-time study must be given by the dual degree adviser at VCU and the appropriate theological school dean of faculty. All degree requirements must be completed within seven years of matriculation. Students can apply simultaneously to both programs and begin study at either institution following the approved curriculum plan; or, a student may begin at either VCU or the seminary and then apply for admission to the other school during the first year of study in accordance with application deadline dates.

The M.S.W. requires 60 credits that include the required integrating seminar and one course transferred from the seminary to satisfy a three-credit M.S.W. elective requirement. The integrative seminar is taken in the final year of study and is co-taught by a member of the VCU School of Social Work faculty and a member of a faculty of an RTC school. The seminar enables the student to integrate theoretical, social justice, empirical, ethical and practical dimensions of social work with the biblical, theological, educational and pastoral perspectives.

Prospective students apply to the VCU School of Social Work and one of the participating theological schools, must meet both sets of admission standards, and be accepted into both programs. For the M.S.W. program, refer to the "Admission to

the master's degree program" chapter in this section. For information about admission to an RTC master of divinity program, contact one of the following schools:

Baptist Theological Seminary at Richmond  
3400 Brook Road  
Richmond, VA 23286-3446  
Telephone: (804) 345-BTSR (2877)

Samuel DeWitt Proctor School of Theology  
1500 N. Lombardy St.  
Richmond, VA 23220  
Telephone: (804) 257-5715

Union Theological Seminary and Presbyterian School of Christian Education  
3401 Brook Road  
Richmond, VA 23227  
Telephone: (804) 278-4230  
Toll free: (800) 229-2990

For information about the M.S.W./M.Div. program, contact the M.S.W. Program Director, 1001 W. Franklin St., Richmond, VA 23284-2027; (804) 828-1041. M.S.W. program applications can be obtained from the VCU School of Graduate Studies Web site at <http://www.vcu.edu/graduate/ps/admission.html>.

**M.S.W. and M.A. in Christian Education: Cooperative program with Union Theological Seminary and the Presbyterian School of Christian Education (Union-PSCE)**

This program has been developed to prepare social workers for service in church related institutions (children's homes, nursing homes, etc.), for planning and working in inner city settings, and for other ministries. Counseling, group work, and educational skills are components of both programs.

This program requires three continuous years of study and leads to a master of arts degree conferred by the Union Theological Seminary and Presbyterian School of Christian Education, and a master of social work degree from VCU. Typically, a student completes the first year at Union-PSCE, followed by two years at the VCU School of Social Work. In the final semester at VCU, students complete an integrative seminar at Union-PSCE. Both degrees are awarded at the end of the three years of study.

Application for admission must be made to each institution separately. Those interested should write both the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051, and Director of Admissions, Union-PSCE, 1205 Palmyra Ave., Richmond, VA 23227.

**Page 39 — Interdisciplinary Studies in Developmental Disabilities**

The Partnership for People with Disabilities was formerly known as the Virginia Institute for Developmental Disabilities (VIDD). The Partnership promotes and facilitates interdisciplinary training of human service professionals at the graduate level who are preparing to work with children or adults with developmental disabilities, and their families.

Through careful selection of course work and practica, the Partnership's faculty works closely with graduate students and their advisers to design a course sequence that builds competency in the area of developmental disabilities. The course work is referenced IDDS – Interdisciplinary Developmental Disabilities Studies.

The Partnership has been able to offer limited stipends to qualified graduate students who specialize in early intervention/early childhood, or leadership development in childhood neurodevelopmental disabilities. These awards are limited and address requirements specified by the funding source.



For more information, contact the Partnership for People with Disabilities at (804) 828-3876, Virginia Commonwealth University, P.O. Box 843020, 700 E. Franklin St., 10th Floor, Richmond, VA 23284-3020.

### **M.S.W. and Certificate in Interdisciplinary Early Childhood Intervention**

This is a 10- to 13-credit competency-based certificate that is offered by the Partnership for People with Disabilities and the schools of Allied Health, Education, Nursing, Social Work and the Department of Psychology. Built on a strong base of advanced professional course and clinical work, students will be prepared to intervene with families and their infants from zero to five years of age who are at risk or have been identified with developmental delays.

In this certificate program M.S.W. students complete 63 credit hours of course work including specialized courses in interdisciplinary work and directed study seminars. The certificate requires that students complete a clinical concentration practicum placement in an approved infant/early childhood field site. The course offerings and practicum are taken during concentration study in the master's program. Interdisciplinary seminars provide opportunities for students to work with care providers in the helping disciplines to promote communication, coordination, advocacy and referral activities.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 W. Franklin St., Richmond, VA 23284-2027, Attention: Early Childhood Intervention Certificate Adviser.

### **Master of Health Administration Policy Changes**

Please refer to the MHA website <http://www.had.vcu.edu/mha/> for recent changes in admissions policies, including a change in deadline date from March 15 to March 1.

### **School of Medicine**

#### **Department of Preventive Medicine and Community Health**

The following courses were inadvertently omitted from the 2003-04 Graduate and Professional Programs Bulletin:

#### **PMCH 642 Advanced Epidemiological Protocol Design**

Semester course: 3 lecture hours, 3 credits. Prerequisites PMCH 571, PMCH 606, BIOS 553 and BIOS 554. Develops skills needed to design and describe in written format a valid an appropriate epidemiology study to address specific hypotheses. Students will discuss hypotheses and possible design methods in class and subsequently present (both orally and in written form) a research design to include a critical review of the literature and hypotheses to be tested. The proposal must address sample size and power, exposure definition, methods for accurate exposure assessment, prevention of measurement errors and statistical methods proposed for analysis.

#### **PMCH 690 Journal Club**

Semester course: 1 lecture hour, 1 credit. Talks given by students and faculty describing and critiquing recent published research or review articles.

#### **PMCH 697 Directed Research in Epidemiology**

Semester course: 1 – 15 credits. Research leading to the Ph.D. degree.